The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 91, NO. 24 CHICAGO, ILLINOIS DECEMBER 15, 1928

THE OPTOMETRY PROBLEM *

WALTER B. LANCASTER, M.D.
BOSTON

From time to time problems of policy arise which have to be discussed and studied until a satisfactory solution is worked out, or at least a step taken in the progress toward solution. After all, one cannot expect final solution of social problems. As times change customs will change, and what satisfied the minds and standards of one period is seen by those who come after as a mere passing phase of growth and evolution. Nevertheless these steps, though temporary, are essential steps and we must not be deterred from taking them by the conviction that they will be left behind by our successors.

Among the problems of policy which have been discussed by chairmen of this section are the teaching of ophthalmology, the establishment of standards, attendance at meetings, the literature of our specialty, the selling of spectacles and the taking of commissions from opticians. There is perhaps no problem confronting us today more difficult of solution than that of our relation to opticians and optometrists. I believe that the reason the solution is so difficult is that the point has not yet been reached where the satisfactory solution can be applied. Considerable progress must first be made while in the meantime we muddle along as best we can under the present unsatisfactory conditions.

There are three parties to the problem: the public, the optician or optometrist, and the eye physician or ophthalmologist. Let us try to look at the matter from the point of view of each of these three parties.

To the public both optometrist and eye physician are a necessity. Some regard the optometrist as a necessity, the eye physician as a luxury. If one were sufficiently interested, he might try to devise a plan for the taking care of the ocular needs of the public by eye physicians exclusively. He might argue that the public would get better care taken of their needs by physicians because of their better qualifications. There would be fewer cases of unrecognized glaucoma, of other unrecognized or improperly treated conditions which need other treatment than the prescription of glasses, and fewer cases of glasses given which are wrong or unnecessary, and fewer cases of unnecessarily high prices charged for glasses. On the other hand, the number of competent eye physicians is of course totally and hopelessly insufficient for any such program, either now or at any time not too remote for consideration. The interests of the public demand that for the present and for a good while to come both optometrists and eye physicians should continue their work.

The optometrists are not unaware of some of the difficulties under which they labor. They know full well that some of their cases need the benefit of such an investigation as it is the province of an eye physician to give; they suspect it in other cases, and they probably know that there are many cases in which the need exists although it is quite unsuspected by them or by the patient. Appreciation of their deficiences has led the optometrists to raise their standards and require far better preparation than heretofore. Thus the standards have been made so high in New York State that the present entering classes in the two leading schools, the school at Columbia and that at Rochester, have dropped from around thirty or forty to less than ten. It is evident that they are alive to the need of raising their standards. But they still fail to perceive what is their greatest lack—what stands in the way of cooperation with eye physicians. I shall recur to this in a few moments.

Just as the dentists have succeeded in organizing a subdivision of medicine into a satisfactory specialty, so the optometrists will in time. A hundred years ago dentistry was a part of the field of the practice of medicine and the setting up of a separate branch of limited practice by men without a full medical training, i. e., with a training limited to dentistry, was strenuously opposed by general physicians who declared that only those who had a full medical training should extract teeth. A modus vivendi has been established between dentists and physicians to their mutual advantage. There have always been those who deplore the progress toward specialization. Nevertheless the wheels of evolution roll on inexorably.

POINT OF VIEW OF EYE PHYSICIANS

Some may think that they have some exclusive rights. All deplore the sad results of the errors and oversights of opticians just as they do those of eye physicians. In either case the public suffers. The remedy in the latter case is obvious: better qualifications on the part of the eye physicians. What is the remedy in the former case? It is out of the question to eliminate the optometrist. Is it feasible to give him such training as to make him competent to deal with all these conditions? By no means. In far too many cases not even the eye physician is showing himself competent. To give the optometrist a training that would make him competent would be to eliminate the optometrist by making him an eye physician. How was the dental problem solved? Can we discover any evolutionary principles applicable to our case? At the present time cordial cooperation exists between physicians and dentists, to the great advantage of all parties. Cooperation between eye physicians and optometrists would, if it were possible,

* Chairman's address, read before the Section on Ophthalmology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

redound to the advantage of the public and the optometrists. If optometrists could refer cases to eye physicians for investigation with the expectation of getting the patient sent back to them for glasses, with the same sort of friendly spirit of cooperation that exists between medical consultants, what a fine thing it would be for the public, at least! What stands in the way? It is not lack of training on the part of the optometrist. It is not that it would hurt the practice of the eye physician; in some cases it would and in some cases it would not, but even if it did, the medical profession has shown beyond a possibility of dispute that pecuniary self interest does not prevent it from fostering progress. The whole history of public health and of the prevention of disease refutes any such opinion. Not a few ophthalmologists have said that they would be glad if it were possible to cooperate with optometrists, and some already have established a basis of cooperation with a few, and have expressed their satisfaction with the results, which have been mutually advantageous.

The great obstacle to consultations between eye physicians and optometrists is *commercialism*. The practice of optometry is too much a matter of business. *It must become a profession*. The essential basis of a profession is the *professional spirit*. This may be defined as the attitude of the members of the profession toward one another and toward the public. It is exemplified in the medical profession by the Hippocratic oath, or pledge. For centuries the best men in our profession have stood inflexibly for these high standards. Many a time and oft have members fallen short of these standards, but ever above the muck of selfishness, greed, commercialism, lust, the banner of our high ideals has been carried by those whom we love to call our leaders. All our customs in the matter of consultation have grown up around such standards. There is not the slightest chance of any official recognition of any lower standards. Any one who lacks these high standards, who perhaps in his secret soul calls them "bunk," knows nevertheless that if he wishes to attain eminence he must at least simulate the possession of these principles, he must talk and act as if he were actuated by them. This is the strongest sort of proof of their validity.

If, as and when the optometrists organize a group of members who will set up professional standards and maintain them, consultation and cooperation will be welcomed by many eye physicians. This I firmly believe will come about.

Eye physicians will be too conscious of the commercialism among their own members not to be charitable toward the faults and mistakes that may be made by an allied profession. This is very different from condoning the faults. Let us make it clear to the optometrists.

I believe that the optometrists will develop a professional spirit incompatible with commercialism. At first only a small nucleus, it will permeate the whole body as a little leaven leavens the whole lump.

520 Commonwealth Avenue.

Mental Defectives.—Admitting that early ascertainment and treatment in the case of mental defectives will not lead to cure, it can in many cases protect the community by helping to make the patients partly self-supporting or less dependent, and by segregation it can obviate the possibility of their bringing mentally defective children into the world and release them from a hopeless battle with life, for which they are insufficiently equipped.—Boyle, A. Helen: Observations on Early Treatment of Psychoses and Psychoneuroses, *Brit. M. J.*, Nov. 24, 1928.

RESTLESSNESS IN INFANCY*

HYMAN S. LIPPMAN, M.D.
NEW YORK

The hypertonic infant represents a definite clinical entity. Because of the hypertonicity of the striated as well as of the smooth musculature, he is able to hold up his head almost from birth and to straighten his body when his head is supported; he is hyperactive, fussy and restless, cries most of the time, vomits considerably, and has frequent loose stools.

Just why the infant is hypertonic is not known. The causes most commonly given are: (1) heredity; (2) congenital imbalance of the autonomic (involuntary, vegetative, sympathetic) nervous system, and (3) cerebral injury caused by passage through the birth canal.

The explanation most commonly accepted is that of autonomic imbalance. This followed the work of Eppinger and Hess, which demonstrated the antagonistic action between the thoracicolumbar and craniosacral divisions of the involuntary nervous system. The symptoms of hypertonicity can be explained by assuming hyperactivity of the craniosacral division (consequently relieved by atropine), or a hypofunction of the thoracicolumbar division corrected by epinephrine. This theory is strengthened by the fact that the restlessness and irritability of the hypertonic infant often entirely disappear with the use of atropine.

According to the behavioristic theory, the phenomena of hypertonicity are conditioned by factors in the postnatal environment, such as feeding, and the emotional attitudes of the parents. However, this instability of the involuntary nervous system is usually demonstrable at birth. The gastro-intestinal symptoms usually resemble those obtained by vagus stimulation, as expressed by distention due to spasm of localized portions of the gastro-intestinal canal. These areas of distention with their subsequent pull on the peritoneum and mesentery are the chief causes of pain in the colic of the infant. The vomiting, diarrhea and setting up of abnormal impulses in the intestinal canal are due to the increased activity of its smooth muscle brought about by the hyperactivity of the vagus. By lessening this activity, atropine acts as a remedial agent.

Discussions of the myogenic theory as opposed to the neurogenic theory, of the paths of the nerve impulses to and from the gastro-intestinal tract, and of the exact place at which atropine acts have been omitted in this report. Recent studies by Alvarez [1] and by Carlson [2] include such discussion. Their work, as well as the observations of others on the mechanisms controlling visceral function, has shown that, though there has been considerable progress in this field in the past few years, much of the knowledge of this subject is still doubtful and contradictory.

This paper represents a study of sixty-three infants with symptoms of colic, vomiting and restlessness. They were seen in the Minneapolis infant welfare clinics and in private practice. Their average birth weight was 3,244 Gm. They ranged in age from 2½ weeks to 6 months, the average being 7 weeks.

* From the Department of Pediatrics, University of Minnesota Medical School, and the Institute for Child Guidance, New York.
* Read before the Section on Diseases of Children at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Alvarez, W. C.: The Mechanics of the Digestive Tract, New York, Paul B. Hoeber, 1928.
2. Carlson, A. J., and Litt, S.: Studies on the Visceral Nervous System, Arch. Int. Med. 33: 281 (March) 1924.

The average gain in weight per week from birth to the first examination was 93 Gm., as compared to 122 Gm. in a control group of infants free from the symptoms named. This lessened gain was attributed to overactivity, vomiting and diarrhea, though, strangely enough, those infants who had more stools a day than the average in this group (3.3) gained more rapidly than those who had less. The least gain was made by those who had one stool a day, or less. The latter group was the most poorly nourished. The infrequent stools represented an insufficient retention of food due either to an inadequate supply or to vomiting shortly after its ingestion.

Four of the group with infrequent stools were in a good nutritional state. Their characteristic bowel movement began with the passage of a small amount of hard fecal material followed by a large amount of soft, watery stool. Such a bowel movement is usually associated with rectal and anal spasm, a condition quite common in the hypertonic infant.

Hypertonicity of the striated musculature was present in every case in which this was investigated. In an earlier study [3] 45 per cent of the infants seen at the clinic and examined as a routine were found to be hypertonic.

Restlessness and crying occurred in 82 per cent of the group during the day, and in only 51 per cent during the night. It was difficult to interpret the letting up of symptoms during the night, since insufficient data were obtained regarding night feedings and sleeping conditions.

The infant was observed, with few exceptions, for from one to two weeks before atropine was recommended. During the preliminary period, every attempt was made to make him comfortable. Change of diet, change of schedule, complementary feedings, temporary removal from the breast, slow feeding, the use of sodium bicarbonate, holding the infant over the shoulder to relieve air swallowing, and keeping the child in a quiet darkened room away from all visitors are methods, some or all of which were used. If no relief was obtained from the use of these measures, atropine was prescribed in a 1:1,000 solution of atropine sulphate, beginning with one-half drop ten minutes before feeding. All precautions were taken to insure the potency of the drug.

In forty-four of the fifty-nine infants given atropine, a definite improvement was noted. In twenty-four of these the response was so prompt and the relief of symptoms so complete that one could safely say that the drug acted as a specific. In the remainder, in whom improvement was noted without a total disappearance of the symptoms, other complicating factors were present.

In nine instances it was decided to check the value of the drug medication. After a definite improvement had been noted the treatment was discontinued, whereupon in seven the original symptoms returned and persisted until atropine was again used. In the remaining two it was unnecessary to carry on further treatment, despite the fact that the drug had been used for only twenty-four hours. It is difficult to predict by the severity of the symptoms for how long a period the atropine will have to be continued.

Five infants were completely relieved with the use of atropine for two or three days, but this period was followed by a return of the original disturbances, which were not benefited by increasing the amount of drug. This is commonly a result of deterioration of the atropine sample, since it has been shown by Haas [4] that atropine begins to deteriorate as soon as the mixture is prepared. It is more likely that complicating factors, such as infection, set in. One must also consider that there may have been a similar period of relief had the atropine not been used, since we do note such intervals in severe untreated cases.

The method finally used and which is recommended is the use of atropine for a week whether or not improvement is noted. In the absence of relief, the dosage of the drug should be increased to the point of tolerance. If the symptoms persist after this point has been reached, the medication should be discontinued. If relief has been obtained, it is advisable after one week to begin omitting the drug before an occasional feeding.

In twelve infants the skin became reddened after small doses of atropine (from one-half to 1½ drops) had been used. All of these infants immediately improved following the use of the medication. One gets the impression that the amount of relief that the restless infant tends to get from the use of atropine varies directly with his sensitivity to the drug.

Four of our infants showed extreme sensitivity to atropine. One, who had been hospitalized, had a temperature of 106.2 F. The drug was withheld for a few days, and when its use was again attempted the temperature went up to 107.2, and was accompanied by extreme flushing and abdominal distention. Another, very sensitive to 1 drop of atropine at 2 weeks of age, was still having three or four stools a day when he was 20 months old. Feeling that the frequency of the stools was due to hyperactivity of the vagus, I tried the use of atropine at this time. Because of his idiosyncrasy to the drug, he was given one-half drop of a 1:5,000 solution. This was followed by extreme redness over the body.

Other evidences of overstepping the atropine tolerance, noted especially in the infant hypersensitive to its use, and usually overlooked, are hoarseness and drowsiness. Several of our infants after small doses of the drug became completely relaxed. Two were semistuporous and were aroused with difficulty, immediately falling back into a deep sleep. Others who have written on this subject have cited instances in which parents have been alarmed at the infant's deep sleep. They explain this relaxation as being the result of a marked fatigue due to lack of rest over a long period of restlessness and poor sleep. This intense relaxation could probably be better explained on the basis of a depression of the nervous system due to atropine overdosage.

One infant developed a sensitization to the drug during its administration. Redness was first obtained when only 4 drops was used. At the next dose 2 drops produced the same effect. Later 1 drop, and finally one-half drop brought about the skin reaction.

My observations led me to believe that atropine in relieving the gastro-intestinal symptoms acts as a specific, but since it does not relieve the hyperactivity of the vagus itself the treatment is symptomatic. One should therefore expect a recurrence of such symptoms as vomiting, colic and diarrhea, either following the removal of the atropine, as is often the case, or later on in life under some special stress such as an acute

3. Lippman, H. S.: Certain Behavior Responses in Early Infancy, Pedagogical Seminary and Journal of Genetic Psychology **34**: 424-440 (Sept.) 1927.

4. Haas, Sidney: The Hypertonic Infant: The Curative Action of Atropine on Certain of Its Manifestations, Am. J. Dis. Child. **15**: 323 (May) 1923; personal communication to the author.

illness or an emotional upset. It is my belief that the same mechanism of a hyperactive vagus acting on the muscle wall of the bladder is responsible for those cases of enuresis in later childhood which respond to atropine as specific therapy.

Eleven of the infants failed to receive any relief whatever from atropine. The chief explanation for this failure seems to lie in factors other than autonomic imbalance. The most important of these, as pointed out by Cameron,[5] is air swallowing, the responsibility for which he ascribes to the nervousness of the infant, who cries and fusses when placed to the breast. He calls attention to the difficulty of adapting the nervous infant to the breast. Because of the restlessness during nursing, the act is conscious instead of reflex. It is therefore incoordinate and is accompanied by excessive swallowing of air with resulting distress and vomiting. He has demonstrated that placing the sleeping child to the breast will prevent much of the air swallowing without subsequent distress, and has even advised the use of 1 grain (0.065 Gm.) of chloral before nursing to allay the nervousness of the infant.

It is difficult, however, to state what actually constitutes a nervous infant. I am sure that many of the infants that Cameron would include under his definition are restless and irritable because of an underlying autonomic imbalance. It is because of the distress accompanying this condition that they rest so little, and because of the vomiting of the food shortly after it is ingested that they are so hungry. It is no wonder that they greedily attack the breast and swallow air during their nursing. It is true that the air swallowed may cause distress, but in nine of my cases much of the restlessness which Cameron might have ascribed to air swallowing disappeared when atropine was used. In five of these the air swallowing was so excessive that the infant was taken from the breast and fed from the bottle. Although less air was swallowed, in only two did the restlessness disappear. The remaining three were made comfortable only when the hyperactive vagus was depressed.

In only eleven of the sixty-three infants studied who failed to respond to atropine could it be concluded that air swallowing in itself was responsible for the clinical picture. It therefore seems surprising in view of these observations that Cameron lays so little stress on the theory of autonomic imbalance and does not suggest the use of atropine.

Many of the emotional difficulties of the preschool and school child can be traced to the period of an early restless infancy. The fussy infant requires constant attention. He is carried about, fondled, made comfortable, fed and changed much more often than if he were quiet and restful. Because of his physical discomfort, parents become oversolicitous and may early develop unusually powerful attachments to the child, who in turn may show a marked dependence on the parents. This pattern, once established, often persists.

In contrast to this, instances are often seen of early antagonism developed in the parents against the restless, fussy infant. The fatigued mother, following the hardships of pregnancy and labor, may find it difficult to become adjusted to her new situation if she is constantly bothered by the physical care of a crying child. Fatigue, disappointment and disillusionment of the parents, especially if the child had not been greatly desired, may start an early rejection which never completely disappears. One need not cite any further instances for the necessity of relieving the restless infant as quickly as possible.

5. Cameron, H. C.: Brit. M. J. 1:815 (May 2) 1925; 1:872 (May 9) 1925.

CONCLUSION

As a result of this investigation, I recommend that the following measures be taken to control restlessness in infancy:

Every attempt should be made to insure the mother rest and relaxation in a peaceful environment. The presence of the child in the home should not preclude other emotional outlets for the parents. The greater share of the management of the restless infant as far as is practicable and possible should be turned over to persons other than the parents. Frequent dietary changes may be necessary before the ideal food or schedule can be realized.

Every reliable known means of relieving air swallowing should be utilized, even to the extent of temporary removal from the breast. The measures suggested by Cameron of placing the infant to the breast in a drowsy sleeping state should be used. His suggestion of using chloral to produce this sleeping state in the infant is worthy of serious consideration.

Atropine should be used. I urge that its dosage be increased to the point of tolerance before the conclusion is reached that its use is ineffectual.

145 East Fifty-Seventh Street.

ABSTRACT OF DISCUSSION

DR. E. J. HUENEKENS, Minneapolis: In discussing restlessness in infancy, the differential diagnosis of the causes is, of course, most important. We have to consider overfeeding and, even more so, underfeeding as a cause of this restlessness. The ordinary figure of 100 calories per kilogram of body weight in many infants is insufficient. The amount of food has to be increased up to 150 and sometimes 200 calories before the infants are satisfied. The psychologic factors cannot be ignored. Many of these infants are suffering from overattention, too much handling. We have all had experience with infants, restless and colicky, who, when removed to a hospital and given very little attention, speedily recovered from all symptoms. Organic factors must be considered, and I have in mind especially pyelitis. I think that in every one of these cases the urine should be examined for the presence of pyelitis. As to the benefit derived from atropine in hypertonic infants, while I have seen a great deal of relief in a number of cases, I am not as enthusiastic about it as Dr. Lippman is. I think perhaps one factor is that we do not give enough atropine. It is necessary not that the infants should be kept on 1 drop before the feeding for five, six or seven days, but that the dosage should be increased to the physiologic limit just as rapidly as possible. They should be given atropine until there is flushing of the face and dilatation of the pupils, and then perhaps given 1 drop less, just below the limit, in order to produce the effect. Even after we do that, there are a certain number of cases that do not respond to this therapy. Many of these patients require, in addition to the breast milk, a large amount of protein and perhaps more salts than are contained in the breast milk; by giving a small amount of a food rich in these elements, say from one-half to 1 ounce of protein milk, lactic acid milk or buttermilk with each nursing, many of these infants are relieved. In the very severe cases none of these measures help. The baby is constantly restless, and does not get any sleep day or night. Some of these infants are relieved completely by weaning and artificial food. Such cases, however, are few, and one should not resort to weaning except as a last extremity. Perhaps with those infants that seem to require weaning, one or two feedings of artificial food should be tried. Occasional babies should be weaned and put on artificial food, and the symptoms will disappear almost immediately.

DR. T. C. MCCLEAVE, Berkeley, Calif.: In hypertonic infants there is no doubt whatever that atropine is the most beneficial

remedy we can use. I have at times been amazed at the tolerance of these infants for atropine. Dr. Huenekens suggested just now the necessity of increasing the atropine dosage. That has been my experience. It is often necessary to increase the dosage very rapidly. I do that by a regular schedule which I write out, for the mother, planning each meal, and prescribing the 1:1,000 solution, beginning with a one-half drop dose and increasing the dosage by one-half or 1 drop daily. I have had an exceptional baby under this method of increase of dosage in whom the dosage went up to a total daily intake of as much as one-fiftieth grain of atropine before the physiologic effects of the drug were manifest. It is amazing how much atropine these babies can take without physiologic effects, unfavorable effects rarely being manifest if the dose is increased slowly and gradually in this manner. The author dealt with one particular type of restlessness, but I want to refer to another cause of restlessness in children which, in my experience, has been not infrequent, and that is the restlessness due to the sensitivity of these babies to some factor in their environment, most commonly their bedding. We occasionally find a baby sensitive to feathers or to horsehair. If one points this out to the mother, she will say that the baby has never been in contact with feathers or horses in any way, yet the baby is sleeping on a leather pillow and horsehair mattress. The removal of these and the substitution of some other mattress, without a pillow, will relieve the baby of the restlessness. It is my practice, when a baby first comes under my care, to investigate the sort of bedding with which it is supplied, and to direct the mother not to use feathers in its bedding or a horsehair mattress; it is better to substitute a kapok mattress, and not to use any pillow whatever. Then there are mechanical conditions, referable to the baby's bed, which are often the cause of restlessness. The soft mattress into which the baby sinks as in a hammock, which causes the mattress to wrap up around the baby, overheating him and causing kinking of the back, and other physical discomforts due to such causes are not to be overlooked in investigating the restlessness of the baby. Every possible factor in its environment ought to be considered, and we should not allow our attention to be directed merely to one thing and, having found one or two possible causes of discomfort, be satisfied that that is the whole picture and cease our investigation at that point.

DR. ISAAC A. ABT, Chicago: A study of the vegetative or autonomic nervous system is one of the most fertile fields and one of the most promising studies that can be undertaken in clearing up many of the obscure points in diseases of infancy and childhood. Since Sherrington first clarified our knowledge concerning the anatomy and the physiology of the autonomic nervous system, a great deal of work has been done, particularly in Germany, on the relation of the autonomic nervous system to diseases of childhood. Many of the obscure spasms, particularly the spasms of the pylorus, and many of the obscure respiratory symptoms with cyanosis which we encounter in young infants during early life have been closely associated with anomalies in the autonomic or vegetative nervous system. It is also thought that there is an association between some of the obscure skin lesions and the autonomic nervous system. A monograph has recently been published on the association between epilepsy and psychic disturbances and the autonomic nervous system. The cardiac and respiratory systems may also be influenced by abnormalities in the autonomic or vegetative nervous system. Probably, too, in the acute infectious diseases, there is some association between the autonomic nervous system and the infectious processes. The investigators have gone further than this. They have shown a definite or a constant relationship between lesions of the autonomic nervous system and the cellular elements of the blood, by frequently demonstrating that lymphocytosis has a definite relationship to lesions of the autonomic nervous system. Then, too, a fairly constant relationship has been found between certain chemical elements in the blood and conditions in the vegetative nervous system. I recall, for instance, that a diminution in the amount of blood potassium is almost constantly associated with some lesion, or supposed lesion, of the vegetative nervous system.

DR. ROOD TAYLOR, Minneapolis: The causation of restlessness, colic and crying in small babies is undoubtedly multiple. I was much impressed by some experimental work Carlson did ten or fifteen years ago. It will be recalled that in hunger he observed an increase in the tonicity of the musculature of the stomach and in the musculature of the intestine, and that along with this there was a greatly increased contraction of these muscles. He took the blood from starving dogs and transfused it into dogs that were well fed, and immediately produced in these animals a most intense rise in the tonus and contractions of the stomach and intestine. The result of that experiment can be applied in many of these cases of colic. Some work of my own years ago showed that in certain babies there could be contractions of the stomach even when the stomach contained food. These babies with colic have a definite tissue hunger. Messengers or hormones are being sent from the tissues themselves through the baby's blood to the baby's gastro-intestinal tract, and this tissue hunger is so intense that it almost tends to defeat its own purpose because it produces, first, overcontraction of the stomach and bowels and, secondly, vomiting, pain and loose bowel movements. In any event, to stop the crying it is usually necessary to make the baby gain in weight. I should like to outline my own routine in many of these patients. I have not been uniformly successful with atropine or with other drugs, but it has seemed that I have had my best success when I have provided in some way or another an abundance of food, when I have secured the most complete rest possible for the baby, and when I have avoided such unnecessary things as weighing before and after nursing, and too frequent putting of the baby to the shoulder to get rid of gas. The important thing is to give the baby as much food as one can and to secure for him as much rest as possible.

DR. STANLEY D. GIFFEN, Toledo, Ohio: The variability of the action of atropine can often be explained by the age of the solution, or by the fact that an overdose is given, inadvertently, of course, At one time I was treating a case of pyloric stenosis or spasm with atropine, starting with an initial dose of 1 drop of the 1:1,000 solution, and leaving instructions that when dilated pupil and hyperemia of the skin appeared, the dose was to be diminished. About 4 o'clock the following morning, the nurse phoned that the baby was in stupor, and had a temperature of 106.8 F. and a rash resembling scarlet fever. The dose had been increased to 4 drops, by giving an additional drop every other feeding, or every feeding, when suddenly this condition arose. On reading the chart, I found that the baby had vomited most of each dose up until the final dose, which was retained, so that the first dose was practically a 4 drop dose. This experience led me to think that the best way to give atropine in these cases is hypodermically, at least until the baby's tolerance is ascertained. The hyperpyrexia promptly subsided under hydrotherapeutic measures and the infant made a good recovery. One other point that has not been touched on, which I think is of great importance, is that many of these restless babies have middle ear trouble. The drums in these cases do not look red, but Shrapnell's membrane does, and often it is distended. If the congestion or tension is relieved, the restlessness disappears.

DR. H. S. LIPPMAN, New York: Both Dr. Huenekens and Dr. Taylor stressed the fact that underfeeding is an important factor in much of the restlessness in infancy. I agree with them. However, I saw many infants during the time that this study was made who were undernourished and were not getting enough to eat. I attributed the restlessness in these cases to underfeeding and tried to correct this by giving larger amounts of food. Different types of food were tried. In several cases I used casein milk because of its reported value in colic. None of these measures, however, brought results. By going back to the stage, at which these infants were getting the so-called deficient feeding and adding a small amount of atropine, it was possible to cause the symptoms to disappear. I did not mean to leave the impression that underfeeding is not a factor in causing restlessness in infancy. One sees too many such cases. In this study, however, only those infants were included who failed to respond to an increased diet. Several speakers mentioned the importance of increasing the dosage of atropine to its physiologic limit before deciding that the drug was valueless. This is a very important thing to do. Dr. McCleave's experience of often finding it necessary to use very large doses before getting results is interesting because in my experience, when

the dosage of atropine had to be increased to any great extent before the physiologic limit was reached, the chances of obtaining results were less. I feel that those patients who are going to respond best to atropine will be relieved by small doses of the drug. I agree that it is important to rule out pyelitis and otitis in cases of restlessness in infancy. In the infant welfare clinic cases we did not do this. Perhaps, if we had done so and also had investigated more carefully the sleeping conditions of the infant, especially with reference to hypersensitivity to feathers, we would have found fewer cases in which the restlessness was due to air swallowing. I am glad that Dr. Abt stressed the importance of the autonomic nervous system in the diagnosis and treatment of medical conditions, since this subject has been sadly neglected.

TREATMENT OF FUNCTIONAL HEART DISEASE *

FRANK J. HIRSCHBOECK, M.D.
DULUTH, MINN.

The conception of the term "functional disease of the heart," as interpreted by medical men, varies from a rigid interpretation of the term, with its restriction to cardiac disorders of psychogenic origin only, to the more liberal view that functional disease involves all conditions which are not accompanied by the obvious signs and symptoms generally accepted as certain evidences of organic disease. The clinical differentiation between functional and organic disease is at times difficult to establish, because, presumptively, in the beginning, at least, all organic disease is preceded by a physiologic perversion, that is, functional alteration, which may or may not be apparent with our present diagnostic limitations. Likewise, many conditions cause disturbance of rate or rhythm, the exact mode of production not always known, which, though hardly distinguishable from the symptoms of emotional or vasomotor instability, should as a rule not be classified as functional states in a restricted sense because, if unrestrained, they certainly lead later to anatomic and structural change. One need only refer to the subjective symptoms of certain endocrine disturbances, such as hyperthyroidism or hyposuprarenalism; the rate and vasomotor disturbance in convalescence from some of the acute infections, as notably seen in pneumonia or erysipelas; the breathlessness, lack of endurance and tachycardia of the anemic states; the throbbing and paresthesias of early hypertension; the feeble beat, pallor and syncope of shock, or the subjective signs of cardiac strain and stress in diseases of the other organs; e. g., the lungs, kidneys and liver. Though benign rhythmic disturbances, such as premature contractions or paroxysmal tachycardia, do occur, it is notoriously difficult and still the subject of argument whether these may be called functionally benign or whether they may prove to have organic significance.

The knowledge acquired through recent physicochemical, electrophysical and biochemical research requires occasional reintegration in its application to the study of disease. It is no longer tenable to restrict the evidences of so-called organic disease to those in which tissue change alone occurs, lest we be unwary of the true significance of dangerous premonitory symptoms and signs. As a result of the change in clinical judgment because of these discoveries, the residuum of truly functional cardiac disorders is virtually reduced to a study of the hyposthenic, the neurocirculatory asthenic and the overemotional and neurotic person; and it is the treatment of the latter varied group to which I will give my attention.

It is unfortunate that the medical profession has so long neglected the intelligent treatment of this large segment of patients, comprising to a greater or lesser measure 60 per cent of medical practice. The fact that these patients do not show demonstrable physiologic, chemical or anatomic change makes our obligation and responsibility none the less keen, and their relative neglect has no doubt been a great factor in the fostering of quackery and unorthodox medicine. The rabbit's foot, amber beads and the horse chestnut, as talismans, are only the minor symbols and fetishes of the more serious and awe inspiring ritual of the chiropractor, or the pseudopsychology and faith of the Christian scientist; yet I am sure that the physician, with his ability to rule out organic disease and his training in psychology—a variable quantum, I admit—can by forceful, emphatic, kindly and direct reassurance accomplish infinitely more than has been done heretofore—at least with intelligent people. The ignorant are never far removed from the barbarism of witchcraft and superstition, and are much more difficult to treat. In the latter, the force of the argument rather than its logic is the important feature.

In the treatment of functional heart disease or cardiac neurosis, the prime requisite in the physician is confidence, care and skill in diagnosis, so that the patient is left in no doubt as to its exactness. Though diagnostic errors may arise, a thorough experience, plus the wisdom of tact and years and an understanding of psychology, will reduce them to a minimum. Since the utmost in diagnostic skill is often baffled, it is no wonder that in the less experienced it is relatively common. The medical training of the intern and recent graduate is not so balanced that an understanding of the influence of the mind on body function is realized, and its neglect often lays the foundation for an aggravated neurosis of great malevolence to the patient's peace and comfort. The lack of opportunity for the medical student to observe the functional states in the medical school clinics and hospital practice, because of lack of space, or interest in their care in intramural teaching, is, I believe, a most forceful argument for a period of extramural practice under intelligent tutelage, such as has recently been practiced in the University of Wisconsin Medical School.

Though the hardened campaigner himself may at times be misled, the diagnosis of heart disease is presently about as conclusive as that of any organ in the body, and the differentiation of benign from organic states is almost invariably above the realm of equivocation.

In discussing the more specific management of the functional states, therefore, I eliminate from consideration those patients who have anatomic and physiologic alterations cognizant with our present methods, and will consider briefly those who have psychoneuroses with somatic cardiac symptoms, and the cardiophobe; the patient with neurocirculatory asthenia; and, as a corollary to the former, those who suffer from true organic cardiac disease but with an additional psychic implantation.

NEUROCIRCULATORY ASTHENIA

It is astonishing that the group of neurocirculatory asthenic patients had not been classified in civil practice

* From the Medical Department of the Duluth Clinic.
* Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

until the opportunity of mass study was permitted in military practice. Its classic description, at least, has not been so concisely formulated. Though some question exists as to its cause primarily, it is no doubt closely linked up with neurogenic factors, and its essential characteristic is a physical inadequacy for the ordinary and extraordinary mechanical stresses of life. Its symptoms are the symptoms of effort, as pronounced by Lewis, and differ only in the ease of their development.

TREATMENT: PSYCHOTHERAPY AND HYGIENIC TEACHING

As in all functional cardiac disease, the greatest caution must be exercised by the examiner, to rule out not only organic disease but all other related causes insidiously affecting the heart and circulation; namely, tuberculosis, hyperthyroidism, anemia and syphilis. No equivocation may be permitted, and many patients with benign symptoms date an aggravation of their distress to an uncertain or unfavorable diagnosis, which has increased their inherent apprehension to the point of functional invalidism and mental unhappiness that requires a long, painstaking regimen and repeated assurance to dispel. Assuming that the usual symptoms complained of—giddiness, faintness, palpitation, precordial pain and breathlessness—are found to be of a benign nature, the first duty in treatment must lie in a well planned statement of assurance as to their significance. These symptoms, though usually excited by physical exertion, are nearly as often experienced by the patient in the quiet hour of repose, and the victim is excited by the fear of heart disaster, in every respect simulating the effort syndrome. To the latter, the fear syndrome is virtually akin.

It must be explained to the patient that the condition is not progressive, and that with care and faithful application to a consistent regimen, an average, normal capacity may be restored.

The patient is told that he is normal in his cardiac mechanism but has merely a limited reserve; he must temporarily be restricted to the pampering of a thoroughbred and not the abuse of a truck horse. He usually understands the simile when he is told that he has a good car but that he is a poor driver. Short effort is well sustained by his nervous, high strung, quickly responsive disposition, but continuous toil is productive of labored distress. Usually the patient is already aware of this limited capacity in tests of endurance, and the statement of fact is met by his memory of relative inactivity as compared with others of his age in pursuing the more arduous competitive games, and his selection of a lighter occupation. The difference in human capacity for toil and effort are explained to him, and the pangs of his inferiority assuaged by drawing his attention to the fact that people of his group, like Schubert, Kreisler, Kilmer or Galli Curci, are just as much to be envied as Jack Dempsey, George Washington or the Duke of Wellington.

The patient must be shown that his basic difficulty is not a disease but rather a lack of acceptance of his physical limitations. His reduced standard of tone and fitness also renders him susceptible to exaggerated symptoms and a tardiness of convalescence in the event of infection, so that every effort should be made to prevent infection when possible, and his convalescence safeguarded by a slower return to his usual routine. In fact, one must guard against a return of symptoms as much as possible, for fear that their frequent repetition make the patient lose confidence in his adviser and allow him to fall back into his previous state of uncertainty and doubt as to the real import of the symptoms. Many patients attribute their symptoms to an acute infection, and all of us see patients in practice who are temporarily overwhelmed by an infective process, notably influenza, tonsillitis or pneumonia. The convalescence is tardy and rehabilitation slow, with palpitation and tachycardia, so that one wonders whether the toxins have actually induced myocardial injury. A careful history usually elicits the existence of antecedent symptoms, however, and with rest and patience recovery ensues. Nevertheless, acute infective processes are frequently very devastating, temporarily. The influence of chronic infections is problematic. Occasionally, a removal seems to be attended by a prompt and specific influence; as a rule, the most that one can anticipate is an integral improvement of the whole physical resistance.

EXERCISE, TRAINING AND OCCUPATION

As Robey and Boas have suggested, exercise and training help greatly, but as a rule the tolerance established is limited by the inherent lack of suitable basic material. The need of sensible restriction should always be kept in mind, as the patient already realizes its logic, and a superior physique and capacity should not be promised or expected. In the young, always, and in the older, when possible, vocational guidance is important, for the discouragement incident to an unsuitable occupation and unavoidable familial responsibilities often crushes all hope of relief.

While there are patients at one end of the scale who are so uncomfortable and uneasy that bed rest seems essential, there are others who are entirely competent except under more than the usual stress. It may be reiterated that effort syndrome is a normal response, but the ease of its development may be abnormal. All exercise should, in the beginning, be graded and based on certain principles. The onset of symptoms should be zealously avoided when possible, and no severe exercise should be indulged in until the tolerance to simpler exercises is established. Beginning with exercise well within the patient's tolerance, gradual increments of severity and length should be added until the efficiency attained is equal to the usual demands imposed. The hours of labor may be materially shortened at first and later lengthened, and be supplemented with calisthenics, walking or mild recreative exercise, such as golf, quoits, archery, curling and bowling, until competence is effected. The interpolation of games to relieve the monotony of systematic training is valuable also in relieving the patient of self analysis and introspection. Heavy exercise is usually not well borne and often defeats our purpose, as the development of unfavorable symptoms makes it necessary to retrace our steps in the upbuilding process.

REST AND MODERATION IN LIVING

Nine hours of rest at night, a casual rest of from thirty to sixty minutes in midday, and freedom from too much psychic strain, are all helpful, and almost always already recognized by the patient as of value. The patient has also learned from experience, as a rule, that alcohol, tobacco, coffee and dissipation are not consistent with comfort, and their indulgence has been abandoned. Rather than assuming that these are etiologic factors, it is more reasonable to consider these agents as merely coincidental strains on his comfort. Modera-

tion in everything diminishes the tendency to the development of symptoms and the concomitant emotional evidences which are almost always present.

Bed rest as a general treatment is to my mind ill advised, and its effect may be pernicious. Too much emphasis is placed on the reduction of cardiac reserve, and to the patient it is an ominous restriction, not consistent with the assurance postulated by the medical attendant.

DIET

Unless there is an associated gastro-intestinal difficulty, the diet need not be restricted very greatly. It should be varied and wholesome, and the food well cooked and nutritious. Since the emphasis on physical rehabilitation and moderate living is so important, overemphasis on factors of little or no value, such as the diet, is psychologically an error.

DRUGS

Treatment with drugs occupies a secondary place in the management of neurocirculatory asthenia. Tonic treatment with iron and arsenic may be employed for its possible invigorating influence or as a placebo. Cardiac stimulants have no place in the regimen. Unpleasant symptoms may be encountered with specific remedial agents, but often the treatment is ineffectual. In the frequent association of nervous and emotional evidences, the bromides are helpful, particularly calcium bromide, since it is less irritating to the stomach and skin. For the low blood pressure often associated, I have used ephedrine at times with good effect, but often with an increase in the symptoms, as the symptoms of fear and effort and the symptoms of hypersuprarenalism are synonymous. Many of the patients are physically substandard in weight and if the aforementioned wholesome, nutritious diet is not sufficient to bring about an improvement, we have found that in an adult patient the so-called mastkur, with small doses of insulin to promote hunger, are productive of material benefit in causing a sharp increase in weight of from 5 to 10 pounds (2.3 to 4.5 Kg.), which incidentally helps to assure the patient of his prospective fitness. A course of physical therapy, notably ultraviolet radiation, may help the resistance of the patient and tone up the weight, vigor and appetite.

Finally, all patients should be carefully reexamined from time to time, to note the onset or establishment of diseases which may masquerade primarily under a similar symptomatology, such as toxic goiter or insidious tuberculosis.

PSYCHOGENIC AND EMOTIONAL CARDIAC NEUROSES

Who of us has not at times experienced symptoms that might, by the uninitiated, be considered as indicative of cardiac disease? In fact, their experience and repetition enable one to assume the attitude necessary for sympathetic and helpful treatment of the afflicted. Riklin says, "The treatment of the neuroses should not be attempted by rough and untrained hands." To the trained physician and psychologist, the psychogenic production of symptoms and even pain is proverbial. The sight and presence of pediculosis or scabies excites a pruritus in the dermatologist; Parker has described the precordial pain in a psychopath who mentally endured the suffering of Christ from the lance of Longinus, and Balzac could conjure up the incisive pain of a knife thrust at will. Such experiences are common, especially in the neurotic person, and to the patient the fear of heart disease is as real as its actual presence. If a neurotic person is the victim of organic heart disease, he is not often made worse by its recognition, but often accepts it rather philosophically as an escape from the constant dread of its existence.

The neurotic symptoms, when apparent, are usually quite closely limited to the heart area. The pain is usually on the left side, where he believes the heart to be, and not substernal; the palpitation is transitory, the premature contraction casual and more often encountered at rest than on exercise. Left sided paresthesias are common, and numerous other subjective symptoms, vague in definition, such as throbbing, beating and rushing of blood. In his description the patient is inclined to the use of superlatives—no doubt an exaggeration induced by the indifferent and nonchalant attitude of the listeners to his constant tale of woe. His introspection is evidenced by his minuteness in detail, and the little paper often carried in his hand with the symptoms serially noted: "L'homme avec petits papiers," as Charcot puts it.

TREATMENT: PSYCHOTHERAPY AND INSTRUCTION IN MENTAL HYGIENE

Psychoanalysis, unfortunately, has been stigmatized as unholy by those who know little of it, and its unsavory beginning, with Freud's symbolism, has made one suspicious of its value. In its modified form, however, it is the most potent agent in the treatment of the neuroses. Little in medicine has afforded me as much aid as the recognition of those subtle psychic phenomena that induce symptoms. Their projection by the patient and their application to the situation in hand is, in a way, the history, diagnosis, prognosis and treatment combined.

It is a grave mistake to interpret the patient's symptoms as a figment of his imagination, and to tell the patient, as is so commonly done, that he is not sick or that he imagines all his ailments, or that he should forget them. The attitude of the patient and his apparent suffering are sufficient proof that the condition is not an enjoyable one and is not performed for its simple effect. He differs from the hysterical patient in that he implores you to make him well, and does not defy you to make him so as does the hysterical person.

Ridiculing or scolding the patient in a high handed manner and with the lack of apparent sympathetic appreciation of his complaints is intolerable and practically never successful. Although it is impossible for every one to experience a cardiac neurosis that would place him in a sympathetic attitude, it is, at least, not difficult for the physician to school himself in psychopathologic study, which will lead him to realize the profound influence that our subconsciousness and our emotional instincts have to do with the production of symptoms in the cardioneurotic and the cardiophobe.

I think that the term "psychoanalysis," may be too formidable to be properly applicable in the treatment of these patients; but, to practice suitable therapy, the underlying neurotic and emotional basis must be established, and all the factors—personal, familial and social—which operate must be cautiously elicited without any semblance of inquisitiveness or prying. Many a patient is promptly restored to mental and emotional comfort as soon as the relationship between his symptoms and psychic distress is explained. With the present trend among the laity for the assimilation of psychologic literature, a rapport is easily established, and instances could easily be cited in almost any one's practice as illustrative of this principle in treatment

As the basis for the psychotherapeutic approach, one must ascertain, in eliciting the history, the patient's basic nervous reaction type in regard to response to physical and emotional strains. One usually procures a history suggestive of a neurotic foundation in the ancestry simulating the outbreaks in the offspring, although, perhaps, in varying portrayal.

The usual zeal, ambition and conscientiousness of the neurotic patient, the particularity in detail in his daily actions, poor adaptation to environmental difficulties, the indulgence and pampering of the parents, the hyperfatigability and the inordinate fears and anxieties all form a basic groundwork to the later neuroses. In the history, it is likewise learned that the immediate precipitating influence may be the prolonged consciousness of symptoms referable to the circulation, as a result of fatigue or infection; the emotional circulatory imbalance due to the excitement of marital or social infelicity; the shock of a cardiac death among those near or dear, leading to a daily analysis of symptoms presumed by him as indicative of heart disease; or introspection due to intensive tuning in on his heart action and its attendant tumultuous symptoms. The causes are varied but, if elicited, are of value as a basis for the employment of proper remedial adjustments in his environment; and since the treatment in these instances is psychotherapeutic rather than medicinal, it makes the history of paramount importance.

As in neurocirculatory asthenia, the treatment primarily must be prefaced by an assurance that no objective evidence of disease is manifest. Whereas many physicians dismiss the patient with this assurance alone, their return again and again for medicinal advice is proof of its failure as a single agent. This assurance is virtually part of the psychotherapeutic approach. The emphasis on the psychoanalytic features, although of extreme importance in the treatment, must be minimized as far as the difficulty of its practice is concerned, because in most cardiophobes and cardioneurotics the problem of establishing a basis of symptoms is very simple. The youth who comes in with left-sided pain in his chest, fearful of death because of witnessing his father in anginal seizures, is carefully advised of the cause of his pain, the physician arguing in favor of the certainty of the patient's safety in various ways, until the patient grasps the significance. The husband who witnesses his wife's sudden death from heart failure, facing the responsibility of the care of six children, must be made certain that the symptoms in his chest are only the symptoms of fear, which may be abolished by the certainty of a good life expectancy. The cardiopath with a superimposition of neurotic phenomena may be plainly told of his true state with an honesty of purpose which will usually set him aright.

REST AND SLEEP

Many patients realize their absence of symptoms in the hour of play and diversion. This serves as a valuable lead in treatment. They must be advised to seek the pleasures and avocations of life which will make them stop listening to "cardiac service noise." A vacation from the patient's work and family is helpful—if need be, in a sanatorium where occasional surveillance may be enjoyed—or at any place where he can be led away from his thoughts, by substituting more pleasurable ideas. Fatigue must be studiously avoided, both physical and nervous. An attempt at building up the physique and endurance is not as essential as in neurocirculatory asthenia (unless it exists as an associated condition), because "heart fear" oftentimes affects the strong as well as the weak and is essentially a psychic reaction and not physical. Adequate rest at night should be procured in order to safeguard the patient's rehabilitation after a day of toil. Senseless tossing about at night before sleep comes on is often obviated by a healthful fatigue from a pleasant occupation, provided the fatigue is not sufficient to shatter the nerves. Simple measures, such as "counting sheep," is a gentle soporific, and may be amplified by the more scholarly, as Kant did, who would think of a word such as "Cicero," and delve into all the ramifications the thought suggested, until his mental faculties were gradually enmeshed in the veil of sleep.

Sedatives, contrary to popular lay and medical opinion, are invaluable in those who are not aided by the simpler means. Bromides, barbital and its innumerable offspring may be used with success, their administration being supplemented with a word of warning as to the evasion of any advice from the community grandmothers contrary to its use. The danger of forming a habit is to my mind nil, except in the few instances in which patients have felt that if a little is good more is better. The necessity for not advising the patient of the nature of the remedy, except that it is not a "dope," is obvious. An alternation of remedies is advisable in long standing cases, and its practice never reveals any tendency to habit formation.

DRUGS AND DIET

Aside from the use of sedatives, there is little indication for drugs otherwise. Tonics, I am sure, have little value, and stimulants may be harmful in causing an excitation of the heart action, with its attendant psychic impression. In patients harassed with benign premature contractions, the trial of quinidine is indicated and is usually successful in their abolition. Many patients have a feeling of pressure on the heart due to "gas" from the stomach. However, in the absence of definite associated gastro-intestinal distress the diet need only be well cooked, wholesome, varied and nutritious, and not restricted too critically.

PHYSICAL THERAPY

In many patients who are in the depths of despair, particularly those who have such annoying symptoms and so great a fear of heart disease that bed rest is necessary, and in whom a borderline psychopathic condition often exists, treatment with physical therapy, exercise and massage is often helpful if not actually essential. The patient feels that something is being done for him, and he has something to think about in the way of therapeutics which he feels that he understands. Although not all patients are aided by a lot of manipulation, many of them feel a benefit from the use of massage. Many of the afflicted feel that some of the physical therapeutic measures, such as ultraviolet irradiation, are panaceas that will correct almost any ailment. One wonders whether the psychic effect incident to their use is not fully as helpful as the immediate effect from the irradiation in raising the resistance and improving the general tone, which it does in greater or lesser measure. It is important in using physical therapy, however, that the patient be repeatedly encouraged to persist in its use, and he must be made enthusiastic about its value. A rather half-hearted cooperation with the physical therapeutist is not likely to be provocative of improvement in the patient's condition. The work should be supervised by the attending physician, in conjunction with the physical therapeutist, and those aiding

in the management of the patient must be constantly urged to keep in mind the art of treatment to be employed in gaining the end in view.

SUMMARY

There is more or less confusion in the differential diagnosis between functional and organic conditions in the heart, which, though at times leading to diagnostic error, is, nevertheless, minimized clinically, because of the relative certainty of cardiac diagnosis at the present time.

Many conditions formerly thought to be purely functional are now known as premonitory evidences of organic disease, and the prognosis must be guarded accordingly.

There are two conditions that may be considered as being purely functional in nature: (1) neurocirculatory asthenia, with its varying manifestations; (2) pure cardiac neurosis, usually of psychogenic or of emotional origin. Since neurogenic influences play so great a part these two conditions frequently overlap, but the treatment may be dissimilar.

The characteristics of the pure cardiac neurosis of functional or emotional origin render the treatment of this condition largely dependent on psychotherapeutic approach, all other treatment being subsidiary.

In a case of neurocirculatory asthenia, the management should be chiefly along vocational guidance, exercise, with an effort toward normal rehabilitation, and definite assurance to the patient of the absence of physical disease. As in all functional disease, the treatment must be carefully individualized to meet the etiologic variations.

ABSTRACT OF DISCUSSION

DR. W. W. HAMBURGER, Chicago: Dr. Hirschboeck's paper reminds me of the statement made a number of years ago by a prominent internist that "he had cured more people of heart disease by telling them they had no heart disease than by any other method." This statement applies particularly to those patients with functional heart disease. One of the best articles in this field is that by Sidney Schwab of St. Louis on what he calls the heart in emotional conflicts. These emotional conflicts are of various types; economic, domestic and sexual—all problems in maladjustment. There may also be patients with various anxiety states, or phobic individuals with phobias of various kinds, relating to the heart in particular, because, as we know, the heart and the brain are two organs of great mystery, and call attention to themselves, because of their mystery. A few years ago I observed a number of cases of postinfluenzal organic and functional heart disease. I was impressed with the combination of both organic and functional lesions. At times the functional symptoms were extremely difficult to differentiate from the organic and vice versa. More recently, this last year particularly, I have been impressed by patients with symptoms of functional heart disease who evidenced latent long-continued infections, with a slight fever of from 99.2 to 99.4 F.; and not until the temperature had subsided did the heart symptoms disappear. Another aspect of this problem is the association of functional symptoms with angina pectoris and coronary thrombosis. I have been particularly interested in the functional complaints of patients with organic coronary thrombosis. I recall particularly a physician who had definite coronary occlusion, whose problem was not at all the coronary problem but who suffered dreadfully from worry and anxiety in connection with the initial attack. In another case of coronary thrombosis, I was at a loss to make satisfactory progress until I called in a neurologist, who diagnosed an inferiority state with an anxiety neurosis, and until he had succeeded in clarifying the situation this patient remained an invalid. My practice since then very frequently is to call in a neurologist for psychiatric consultation. I find that the neurologist is extremely helpful to the internist in these cases. From the standpoint of treatment I agree with Dr. Hirschboeck as to the value of bromides. In the last two or three years I have used also small amounts of compound solution of iodine, as occasionally these so-called functional heart patients have some thyroid disturbance. We occasionally give them thyroid substance.

DR. S. MARX WHITE, Minneapolis: Those of us who study the heart and circulation from the objective side must give a great deal of time and attention to the study of functional disturbances as well. Dr. Hirschboeck has done us a service in limiting the discussion to neurocirculatory asthenia and to the individual with emotional disturbance. This renders the discussion simpler. Neurocirculatory asthenia has a broader range of symptoms and also is likely to show more definitely that we are dealing with a defense reaction. During the war we saw such cases in large numbers, but we still see them in civil life. I am aware of the fact that the physician often has patients come to him because he has gained the confidence of those patients. We cannot readily dismiss such patients to another physician and yet, from having been associated with neurologists, I know that they have greater facility in discovering the sources of emotional disturbance from which these patients suffer. I have found it of tremendous value, when possible, after careful study by myself, to turn these patients over to a neurologist who has acquired skill in discovering the sources of emotional imbalance. The latter is not always easy. One point has been suggested but not stressed: Many persons who have cardiac symptoms of emotional origin show manifestations on awaking from sleep because of dreams. Sometimes the patient is not aware of the dream and it may take careful work to bring out the fact of the dream. The psychoneurologist is able by his training to do this much more effectively than I am. That brings out the point Dr. Hirschboeck mentioned, which is important, that there should be much better training of the medical student and medical graduate in this phase of the work, so that he may be capable of handling the delicate situation that thus arises.

DR. FRED M. SMITH, Iowa City: It is often extremely difficult to exclude the possibility of organic disease. Under these circumstances the latter diagnosis is frequently made to the detriment of the individual. Systolic apical murmurs, which at times may be rather harsh in character, are often present. There may be, in addition, a suggestion of a thrill, particularly when the cardiac rate is rapid, which may suggest mitral stenosis. The size of the heart is, perhaps, the most important feature in determining whether or not an organic disease is present. Another point that I should like to emphasize is the importance of considering these individuals as a problem in differential diagnosis. The cardiac symptoms are very frequently a manifestation of other less evident conditions, such as an incipient pulmonary tuberculosis, other obscure types of infection, anemias and hyperthyroidism.

DR. J. P. ANDERSON, Cleveland: Many of these patients come to the clinic because of hyperthyroidism. I think that arises from the fact that they nearly always have a rapid heart rate. We do not find that to be the case, although they very often show a slight increase in metabolic rate, up to 10 or 15 per cent above normal. Formerly, some of them were operated on with universally poor results. We do not do that any more. A few young boys of 15 or 16 were sent to us to see whether they were fit to enter military school. We found on examining them in the lying down position that they frequently had a heart rate of about 78 or 80. If we had them sit up, it would go up to 100, and on standing up it would go to 130 or 140. The blood pressure would usually decrease. A girl's vasomotor system was in such condition that when she stood up and tried to bend over she fainted. The hearts in these cases are almost universally normal. I think that it is a case of vasomotor instability. I agree with Dr. Hirschboeck that medicines are of little avail. The cases which occur in women are due usually to some neurosis. Sometimes it is a sexual neurosis or a dissatisfaction neurosis associated with their domestic life. Occasionally it seems to be the inferiority complex which results in a dissatisfaction neurosis. In these cases I think it is valuable to call in a good psychoanalyist, but for the most part just common ordinary horse-sense and a good physical examination to acquire the patient's confidence will

open up the way so that she will unburden the tale of wo that has been wrecking her life.

DR. F. J. HIRSCHBOECK, Duluth, Minn.: Unfortunately these patients are like the lost tribe of Israel in medicine. Few men up to the present time have taken any material interest in their treatment. The general practitioner with common sense and experience can treat these patients as effectively as any one. It is not necessary to refer them to a psychiatrist, except in extreme instances, and it is the duty of every physician, be he general practitioner or specialist, to cultivate a mode of approach and treatment which will prove effective. I believe that the neglect in treatment or the indifference to their care has been a great factor in the development of the various medical cults. I shrink somewhat from the term psychoanalysis in regard to the elucidation of the patient's problem, since the term is frequently misunderstood; but in a simple interpretation it serves the purpose effectively as a method of diagnostic approach. Like Dr. Hamburger, I prefer the use of calcium bromide because it is the least irritating to the skin and stomach, and I believe that it has more advantages and fewer disadvantages than any other sedative employed. It is astonishing to note the improvement in weight and the attendant psychic encouragement that the use of insulin provides. The hereditary fabric of the patient, however, is so dominant that in about one third of the cases the physical condition is not permanently benefited, and the patient reverts to his primary tendency.

"TRAUMATIC ORCHITIS": A MISNOMER *

MILEY B. WESSON, M.D.
SAN FRANCISCO

The fact that trauma and strain are recognized by most practitioners and no pathologists as etiologic factors in inflammation of the testicle prompted this study. This paper is based on a review of the literature and an analysis of seventy case reports, including twelve from the California Industrial Accident Commission—all that have been passed on by their medical department. In the latter are incorporated opinions from most of the recognized urologists in California and they show a marked lack of uniformity as to the influence of trauma and strain. This is in keeping with the literature, the foreign articles minimizing the possibility of a traumatic orchitis, and the American ignoring or simply didactically accepting it.

In our fathers' time many diseases were thought to be due wholly or partially to trauma or miasms, but both terms have been deleted from modern textbooks of medicine and pathology. When the etiologic principles responsible for diseases had begun to be scientifically studied, political elements entered in and the pendulum started to swing backward, with the result that a discredited, universal, etiologic factor—trauma—again came into its own. It is true that acute anterior poliomyelitis is no longer thought to be caused by violently wrenching a child's arm,[1] but the workman's urethritis is still due to "strain" and not gonorrhea, his tabes or paresis is not necessarily a consequence of syphilis but may be the result of trauma,[2] and, if he has an undescended testicle, the hernia that is necessarily concomitant [3] is considered due to an industrial strain; furthermore, he is never afflicted with a plebian gonorrheal or tuberculous epididymitis but always suffers from a disabling compensatory traumatic orchitis instead.

ETIOLOGY

It is only in recent years that differentiation has been made between processes affecting the epididymis and those involving the testes. Epididymitis is comparatively common and orchitis is rare, but the latter does occur not infrequently as a complication of certain infectious diseases. The idea of a traumatic orchitis is indefensible according to the French school.[4] The diagnostician who casually adds to his list of etiologic possibilities the term "and trauma," or who assumes that trauma has occurred, even when not alleged, because he cannot find a cause, not having examined the seminal vesicles, is leaving the field of the "science of medicine" and passing into that of the "art of medicine."

The proponents of the trauma theory who "will to have it so" naively state that "the man was well, he received a blow, now he has a swollen testicle, therefore it is a traumatic orchitis," and this is the view commonly accepted by most industrial accident commissions, particularly those who by "ingenious theory and broad interpretation" are attempting to bring all the injured within the fold of "remedial legislation," the precursor of state medicine.

Because of the mobility of the testicles, injury is not expected in these organs except in the very rare situation when it is not possible for them to slip aside because of the rapidity of movement or the large size of the moving violence.[5]

If a healthy testis could be injured by trauma, orchitis should be common among college athletes. The records of the University of California [6] and Stanford University [7] do not include a single case of orchitis, and only three of hematoma (none of which required surgical intervention). Dr. T. A. Storey,[8] in thirty-two years of medical supervision of athletics in various universities, has never seen a case of traumatic orchitis. He further noted that epididymitis (of venereal origin) did occur among athletes, but only in the same proportion as in the entire student body. These observations are in accord with the reports from handlers of professional prize fighters and wrestlers.

The inflammation of the testis without a coincident prostatitis and seminal vesiculitis indicates a blood-borne infection.[9] Acute orchitis is due to either an acute bacterial invasion of the organ or a bacterial toxemia. The type example of hematogenous orchitis is seen in mumps,[10] typhoid,[11] pneumonia [12] and smallpox. MacCallum [13] states that whether a blow could predispose to the localization of bacteria from some other focus of infection is hard to prove, but tuberculous and acute epididymitis can come only from their appropriate infection.

Differentiation must be made between saprophytic and pathogenic organisms, and proof of the presence

* Read before the Section on Urology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Jacobi, M. P.: Infantile Spinal Paralysis, in Pepper's System of Medicine, Philadelphia, Lea Brothers & Co. **5:** 1151, 1886.
2. Lewy, R.: Injuries to the Head and Their Sequelae, Bull. 3, New York Department of Labor, Medical Division, December, 1923, p. 14.
3. Ferguson, A. H.: Modern Operations for Hernia, Chicago, Cleveland Press, 1907, p. 63.
4. Sibileau, P., and Descomps, P.: Maladies des organes génitaux de l'homme, in Le Dentu, A., and Delbet, P.: Nouveau traité de chirurgie **32:** 324, 1916.
5. Scheele, K.: Die Beziehungen der Hydrocele zu Unfallverletzungen, Deutsche Ztschr. f. Chir. **195:** 286-319, 1926.
6. Legge, R. T.: Personal communication to the author.
7. Roth, E. P.: Personal communication to the author.
8. Storey, T. A.: Personal communication to the author.
9. Barney, J. D.: Abscess of the Testicle, Surg. Gynec. Obst. **18:** 307-313, 1914.
10. Ballenger, E. G., and Elder, O. F.: Orchitis from Mumps, J. A. M. A. **75:** 1257-1258 (Nov. 6) 1920.
11. Smith, G. G.: Epididymo-Orchitis Complication in Typhoid Fever, Tr. Am. Urol. A. **6:** 111-118, 1912.
12. Mills, R. G.: The Pathological Changes in the Testes in Epidemic Pneumonia, J. Exper. Med. **30:** 505-529 (Nov.) 1919.
13. MacCallum, W. G.: Personal communication to the author.

of a nidus of virulent infection in the prostate and seminal vesicles is very important. Recently, Reith [14] reported that bacteria could be isolated with considerable regularity from the blood and muscular tissues of living animals but hastened to add that "it is not assumed that bacteria 'live' and multiply in healthy tissues." Almost any organism in the blood stream may enter the testis, and if there is a lowered resistance of the gland or an overdose of the bacilli a foothold may be gained and characteristic lesions produced. However, the rule is that organisms which have invaded the general circulation are rapidly filtered out and destroyed although they may remain viable for a shorter or longer period.[15]

Concerning tuberculous epididymitis in particular, two questions are of vital interest to medicolegal boards. Did the injury cause "a traumatic exacerbation of a preexisting lesion," or did "the lowered resistance of the damaged site encourage migration of organisms to that point"? European boards equitably handle such cases by attributing the major part of the disability to the preexisting disease and the remainder to the injury. If the testis was already diseased so that without injury it would have had to be removed in a short time, compensation for the loss of the gland should not be given, but if it was without doubt entirely healthy before the injury and the other testis is absent, a compensation for its removal is in order (because of the loss of internal secretion).[16] Compensatory awards should be calculated on the basis of length of time it would take to restore an injured undiseased organ to normal function.

Simmonds,[17] Tylinski,[18] Walker [19] and others have experimentally proved the possibilities of localized foci of tuberculosis following severe trauma. The occurrence of an exacerbation in an already present testicular or epididymal tuberculosis can be accepted if the disease becomes worse immediately after an injury or in a few days, and is not already in its last stages. The direct spread of the disease from one testicle to the other through the vas remains unproved. However, it is characteristic of tuberculosis of the epididymis to extend to the opposite side within a year or two of the first involvement in more than half the cases.

Sanitary reports of the Prussian army (1900-1905) show that 65 per cent of the patients with genital tuberculosis gave histories of bruising, but 35 per cent had had an infection, generally gonorrheal, of the epididymis. Delorme [20] never saw a case of traumatic orchitis in the infantry, and saw it in the cavalry only when there was gonorrhea or a latent tuberculosis. Barney [21] reported, in a study of a small series of cases of tuberculous epididymitis, from civil life, a possible history of injury to the affected organ in 19 per cent of the cases.

The presence of tubercle bacilli in the canals of the tubules of otherwise healthy testes in the tuberculous is no longer accepted. Before a tuberculous epididymitis can be attributed to a contusion, two conditions are necessary: the blood must be filled with tubercle bacilli from a traumatized focus, such as an advanced pulmonary lesion or a miliary tuberculosis, and at the same time the testis or epididymis must be anatomically so injured that the place of injury prepares a suitable culture medium for the settlement of the tubercle bacilli from the blood stream. Trauma as a cause of tuberculous epididymitis, therefore, is theoretically possible but practically extremely rare. The German authorities [22] rule that before a case can be attributed to trauma it must accord with the following postulates:

1. The patient should have been entirely free of tuberculosis before he was injured and have a negative family history.
2. The injury must have been of the kind to cause the lighting up of a latent local infection, or make mobile the tubercle bacilli from a distant focus.
3. Trauma must be proved by constitutional disturbance or signs of a local anatomic injury, such as ecchymosis or swelling.
4. Tuberculosis must not appear sooner than from three to four weeks following the injury and not later than from two to three months thereafter.

Rusk [23] and Mills [24] state that as to the influence of indirect strains, such as those in the back, they cannot conceive of any mechanism for the production of epididymitis, orchitis or varicocele even with the greatest stretch of the imagination. "Trauma by effort" is a symptom complex due to recurrent slight infections, and is not an entity.[25] Moty [26] reported four infectious attacks, none lasting more than forty-eight hours, which eventually resulted in a complete atrophy of the left testis. Nash [27] and Bonner [28] solemnly state that some of the cases are due to an infection with *B. coli* brought on by a strain while the bladder is full of infected urine. Velpeau [29] suggested the possible mechanical factor of a spasm of the cremaster with compression of the cord by the abdominal muscles. Delorme [20] cites cases of mild transient orchitis due to ungratified sexual excitement or excessive venery. MacCallum [13] says, "Lifting a weight I can hardly believe an imaginable predisposing cause of orchitis. My feeling without absolute proof is that the strain or blow is an eagerly remembered coincidence." Traumatism of the epididymis during urethritis favors the development of epididymitis.[30]

PATHOLOGY

Simple contusion of the testis ruptures small vessels with resultant multiple hemorrhagic points. The hemorrhage is never great, as the pressure of the tunica vaginalis stops it. There may be edema and the testis may become enlarged and firm. The results of edema may be serious, as fibrosis occurs at each focus of injury. If sufficient widespread cicatricial contraction occurs, it might possibly result eventually in an atrophy of the testis. Then spermatogenic function is arrested, although interstitial cells persist. Churchman [31]

14. Reith, A. F.: Bacteria in the Muscular Tissue and Blood of Apparently Normal Animals, J. Bact. **12**: 367-383 (Nov.) 1926.
15. Helmholz, H. F., and Millikin, Frances: The Kidney: A Filter for Bacteria, Am. J. Dis. Child. **29**: 497-505 (April) 1925.
16. Lequeu: Ce qu'il faut penser de l'orchite traumatique, Progrès. méd. **37**: 197-199, 1922.
17. Simmonds, M.: Ueber die Veränderungen des Hodens bei experimentellem Verschluss des Samenleiters, Mitt. a. d. Hamb. Staatskrankenanst. **2**: 241-253, 1895-1898.
18. Tylinski, W.: Experimentelle Beitrage zur Hoden-Tuberkulose, Deutsche Ztschr. f. Chir. **110**: 507-513, 1911.
19. Walker, K. M.: Treatment of Genital Tuberculosis in the Male, Lancet **2**: 367 (Aug. 20) 1927.
20. Delorme: De l'archi épididymite prétendue par effort, Thèse de Paris, 1877.
21. Barney, J. D.: Infections of the Testicle and Genital Tuberculosis, in Cabot: Modern Urology, Philadelphia, Lea & Febiger **1**: 517-579.
22. Zollinger, F.: Hoden- und Nebenhodentuberkulose und Unfall, Ztschr. f. Tuberk. **48**: 119-129, 1927.
23. Rusk, G. Y.: Personal communication to the author.
24. Mills, R. G.: Personal communication to the author.
25. Terrillon: De l'orchite par effort sa terminaison par l'atrophie testiculaire, Ann. d. mal. d. org. genito-urin. **3**: 230-237, 1885.
26. Moty, E.: L'orchite traumatique existe-t-elle? Rev. clin. d'androl. et de gynéc. **19**: 168-181, 1913; Doit on admettre l'existence de l'orchite traumatique? Semaine méd., Oct. 10, 1911, p. 494.
27. Nash, W. G.: Two Cases of Abscess of Testis Due to Bacillus Coli, Brit. M. J. **1**: 149-150 (Feb. 2) 1918.
28. Bonner, W. P.: Acute Epididymo-Orchitis Due to Bacillus coli, Lancet **2**: 996, 1913.
29. Velpeau: Testicule du dictionnaire de zoologie **29**: 467.
30. Young, H. H.: Practice of Urology, Philadelphia, W. B. Saunders Company **2**: 168.
31. Churchman, J. W.: Traumatic Atrophy of the Testicle, Bull. Johns Hopkins Hosp. **16**: 265, 1905.

reported an orchitis in a 19 year old boy following a kick in the scrotum in which there was no connective tissue increase. The removed testis was the size of a hazelnut, both normal and atrophied tubules were present, and the vas and epididymis were patent.

Some difficulty may be encountered in differentiation between a congenital predestined torsion of the testis and orchitis.[32] What starts as a torsion may end as an orchitis owing to the interference with the circulation of the testis and its subsequent invasion by bacteria.

Cases of tuberculous epididymitis are often overlooked because the examiner waits for a sinus to develop before making a diagnosis (case 4), just as the old syphilologist waited for secondary symptoms (which frequently did not appear) before beginning treatment.

SYMPTOMATOLOGY

In true trauma of the testis either there are constitutional symptoms, as nausea, vomiting, great weakness, fainting and evidence of extreme shock occasionally resulting in death (with only slight local hemorrhage at postmortem), or local evidences of injury as extravasation of blood with resultant pain, which is increased by motion, loss of function with swelling beneath the deep fascia, and discoloration, which appears promptly because of injury to the superficial structures. These classic symptoms are unknown to those claimants designated by Schröder [33] as suffering from "aphilophony" (i. e., distaste for effort or desire to avoid work), who have merely a swollen testicle and a story of a blow or strain.

REPORT OF CASES [34]

An analysis of the seventy cases of "traumatic orchitis" in this series is presented in table 1.

TABLE 1.—*Analysis of Cases of "Traumatic Orchitis"*

1. Incidence:		
Right	31	
Left	29	
Bilateral	10	
2. Alleged etiology:		
Direct trauma	29	
Trauma to groin	11	
Strain (lifting)	30	
3. Final diagnosis:		
Gonorrheal epididymitis (with urethritis)		3
Venereal epididymitis (seminal vesiculitis with history of gonorrhea)		10
Nonvenereal epididymitis (seminal vesiculitis, no elicited history of gonorrhea)		36
Tuberculous epididymitis		14
Hematocele		2
Torsion of spermatic cord		1
Gumma		3
Seminoma		1
Orchitis		0

In no instance was there an atrophy of the injured testis, but five cases of atrophy following a previous orchitis, which had been overlooked or casually noticed by the patient, were present in the series.

The following brief case reports are characteristic of medicolegal urology. Rarely is there an attempt made to elicit a history of venereal diseases or abnormal sexual practices to explain the infections present in the genito-urinary tract; instead, the condition of the prostate, seminal vesicles and urine is ignored and emphasis is laid on the discredited theories of strain and trauma to explain the epididymitis.

32. Keyes, E. L.; Collings, C. W., and Campbell, M. F.: Torsion of the Spermatic Cord, J. Urol. **9**: 519-535 (June) 1923.
33. Schröder, P.: Rentensucht und moralischer Schwachsinn, Deutsche med. Wchnschr. **52**: 1325-1327 (Aug. 6) 1926.
34. The use of the medical records of the California Industrial Accident Commission has been permitted through the courtesy of the medical director, Dr. Morton R. Gibbons.

CASE 1.—A laborer, aged 62, while piling boxes, and following no particular effort, noticed a pain in the right testicle, June 21, 1927. The next morning there was a swelling which confined him to bed for two weeks. He was seen by a urologic consultant, August 3, who found the right epididymis enlarged and indurated, especially at the upper pole, evidently the condition remaining after an old epididymitis. The vas and cord were slightly thickened, the prostate was enlarged, the secretion was normal (?) and the urine was purulent; also there was a left hydrocele of which the patient was not aware. The opinion of the consultant was that from all the evidence at hand the swelling of the testicle could not be accounted for except by referring it to trauma which occurred during the patient's work. "As a rule," read the report, "the onset of a traumatic epididymitis is rather more sudden and definite than appears to have been true in this instance but there is nothing else in the history or in the examination to account for the inflammation."

The legal referee, whose sound medical ideas were apparently violated, said: "It is rarely this complaint is found to be industrial but since the assistant medical director concurs in the finding I am drawing award accordingly." A diagnosis of traumatic orchitis induced by labor was made.

CASE 2.—A laborer, aged 25, while disconnecting a pipe, Oct. 8, 1925, struck himself in the right scrotum with a wrench. October 20, a surgical consultant reported that there was no evidence of trauma to the scrotum in the way either of a contusion or of an abrasion. Both epididymides were swollen, nodular and exquisitely tender to pressure. The estimated length of disability was one week. November 30, a urologist made a tentative diagnosis of bilateral tuberculous epididymitis; December 11, an exploratory epididymotomy was performed. Two ounces (60 cc.) of clear fluid was evacuated and the specimen of tissue removed was reported as being chronic suppurative epididymitis. April 7, 1926, the epididymitis and vas were removed from both sides and the laboratory reported bilateral tuberculous epididymitis. The referee ruled that a blow severe enough to set in motion and cause epididymitis would cause the parts to become so sensitive as to impel the victim to seek medical aid immediately; therefore, the claimant should "take nothing."

CASE 3.—A man, aged 34, married, a foreman of a wrecking crew, while turning over a joist, July 7, 1924, suffered a strain in the sacral region. He quit work at the end of two hours. July 19, he noticed a pain in the left testicle, and by July 22 a right epididymitis had developed. His family physician hospitalized him and subjected him to cystoscopy, August 1, 15 and 22. He was seen by a surgical consultant and was reported as having a bilateral traumatic orchitis, accompanied by hematuria, chills and a temperature of 103 F. October 4, a urologic consultant reported that the patient stated that he had never had gonorrhea and, as the patient looked honest, he believed that the strain of lifting was directly responsible for the backache. The swollen testicle ten or twelve days later was a little harder to account for, but he assumed that the strain in the back was associated with some disturbance such as a traumatic rupture or hemorrhage in the seminal vesicles, from which point the inflammation later extended to the testes.

The industrial accident commission accepted this assumption, likewise ignoring the cystoscopies, and ruled that the man was entitled to total temporary disability because of bilateral epididymitis due to the strain of lifting, which occurred two and a half months before.

CASE 4.—A laborer, aged 42, Oct. 15, 1925, was struck a glancing blow on the left leg and scrotum by a block of ice; three or four days later there was marked swelling. Traumatic orchitis was diagnosed, and on May 1, 1926, orchidectomy was advised because of degenerative changes. May 6, a urologist found that the urine contained masses of acid-fast bacilli; the left globus minor was 2.5 cm. in diameter; the seminal vesicles were stony hard, and bound down by dense adhesions, the prostate was indurated, and the secretion contained 100 per cent pus, consequently a diagnosis of tuberculosis of the epididymis, seminal vesicles, prostate and kidney (?) was made.

Two months later a second urologist questioned this diagnosis (because there was no sinus) and reported that the left epididymis was thickened, rather markedly hardened, especially at the lower pole, but not very tender. The left seminal vesicle was somewhat thickened, a little distended and rather stiff on manipulation, and he decided that the genital abnormalities were due wholly to trauma. The medical department accepted the second opinion, and ruled that the swelling was simple or traumatic in character rather than tuberculous, and the commission allowed ten months' temporary disability but stated that "any further disability suffered at this time is due to disease and not injury." The patient then disappeared but was finally located, May 11, 1928, in the southern part of the state and was reexamined. It was found that the tuberculous process had extended one week before to the right globus minor, the left vas and epididymis were nodular and the prostate and seminal vesicles were stony hard. Unfortunately for the patient, he has so far been unable to reopen his case and claim disability for the tuberculosis of the right side.

CASE 5.—Dec. 13, 1924, a truck driver strained himself while lifting with his shoulders and experienced a sudden, sharp, acute pain which radiated along each spermatic cord. The history was negative except for an attack of gonorrhea in 1915. Examination showed both epididymides to be tender at the upper poles and a few varicose veins were matted together. The urologic consultant reported that the patient's pain and disability followed very quickly after his accident and it was well within reasonable probability that the severe strain to which he was subjected induced an acute varicocele with pain in the scrotum. In the consultant's opinion the disability was due to the accident, and the commission ruled accordingly.

CASE 6.—A teamster, aged 60, was hit in the left groin by a single-tree, April 18, 1923. Shortly thereafter he was operated on for "hydrocele of the cord," but a tumor mass developed in the scar and on June 28, 1923, following a biopsy the pathologist reported syphilitic orchitis. Two months later, because of the increasing tumor and cellulitis, a second incision was made, followed by death. The pathologists reported sarcoma and the insurance carrier paid a death claim for traumatic orchitis.

CASE 7.—April 5, 1924, a laborer, aged 51, stooping over, was struck on the left testicle by a mop which fell from a wringer on a chair behind him. The swelling began in four hours, and on the following day the testicle was three times its normal size. Three months later the left epididymis was nodular, the veins were distended and the prostate was enlarged, particularly on the left, with indurated nodules on deep palpation. The expressed secretion contained clumps of pus and the urine was purulent. The legal referee ruled "traumatic epididymitis," with the statement: It is true that as a rule epididymitis is caused by a venereal infection, but epididymitis is also caused by trauma, and that statement by me is upheld by the commission's decisions in the past and also by the medical works I have read on this subject. This lay opinion that the questionable trauma and not the seminal vesiculitis was at fault prevailed.

SUMMARY

Seminal vesiculitis and not contusions or strains is responsible for the epididymitis commonly diagnosed as "traumatic orchitis."

Trauma as an etiologic element is questionable, but strain is as inconceivable a factor in orchitis as in tonsillitis.

The burden of proof that trauma and strain are the causal factors in orchitis and epididymitis should rest on the proponents of this theory and not on the dissentients, as at present.

Extensive tuberculosis of the testis and epididymis may exist without any symptoms, so that the patient first notices it when a sinus has developed. The fact that a patient was fully able to work before his injury does not preclude the existence of an active genital tuberculosis at that time.

The relation of trauma to tuberculous epididymitis, "orchitis" and new growths of the testicle is not clearly indicated, although it is common to obtain a history of a blow on the testicle in these diseases. However, since every male has suffered some slight injury or another of the scrotum and it is well known how laymen will associate disease with trauma, there is danger of attributing to injury diseases of the testicles which were present before the blow was received and to which the accident merely called attention.

An epididymitis is secondary to a urethritis or seminal vesiculitis and its occurrence depends on the virulence of the organism and the susceptibility of the patient, the extension to the epididymides inevitably appearing regardless of whether the patient is confined to bed or receives a blow on the testicle.

With the advent of the workman's compensation legislation, the "germ theory" started for the discard and "trauma" took its place as the cause of "orchitis," hydrocele, benign prostatic hypertrophy and typhoid.

College athletes never have traumatic orchitis but occasionally suffer from epididymitis caused by infections.

Very often accepted scientific experience is not considered when it is a matter of helping an insured one according to his desires; a diagnosis of traumatic orchitis is never justified unless there is definite proof of the occurrence of some objective symptoms of trauma, the absence of infection from the urine, and prostatic and seminal vesicle secretions, and in most cases a beginning atrophy of the testes within three months.

Appropriate agencies will care for the "justice, equity and politics" of the injured one's claim; the urologist is interested only in keeping pure the etiology and pathology of diseases.

Of the seventy cases of "traumatic orchitis" here analyzed, only three could be attributed to trauma—two hematoceles and one torsion of the testicle, the remainder were cases of gonorrheal, nonvenereal and tuberculous epididymitis, gumma and cancer.

1275 Flood Building.

ABSTRACT OF DISCUSSION

DR. L. D. KEYSER, Roanoke, Va.: Speaking from the standpoint of general pathology, the rôle of trauma in producing inflammation is difficult to evaluate. Clinical evidence is indefinite and experimental evidence inconclusive. That epididymitis or orchitis, in some degree, could arise following trauma, even though the patient is free from gonorrheal or tuberculous taint, would appear at first thought to be a reasonable assumption. All adult males can remember some minor but temporarily painful injury to these parts. Yet, as Dr. Wesson has so well shown, few actually authentic case reports are to be found, and, at most, the condition must be very rare, if it occurs at all. The question of whether injury may invite infection from a diseased urethra, vesicle or prostate is equally difficult to prove or disprove. Clinically, we take meticulous care not to overdistend the urethra, to use instrumentation, or to massage the prostate in acute or subacute cases of urethritis. Does epididymitis ever develop from urethritis without some degree of trauma? We must not be too dogmatic and say that it is not a factor. Tuberculosis of the genito-urinary tract is even more puzzling, as we are still in a state of confusion and perhaps dissension regarding the mechanism of its distribution. What evidence we have is presumptive and not final, although it tends to minimize the traumatic factor.

DR. WILLIAM E. STEVENS, San Francisco: The majority of urologists have regarded trauma as a causative factor in many instances. There is no doubt that an attack of orchitis or epididymitis due to syphilis, gonorrhea or tuberculosis has furnished excuse for numerous malingerers to claim disability

due solely to trauma. Dr. Wesson has added much of definite value to our knowledge of these conditions.

DR. G. H. WOOD, Detroit: The courts in some states have held that under the compensation law a man is hired in whatever condition he is. If he has only one eye, the employer takes the risk. If he has germs in his system, the employer takes the risk. In a case in which I was a witness, and failed to make any impression, a man was carrying a box with a hole in each end for a handle; he bumped one elbow and his hand slipped so that the end of the box swung around. He immediately complained of an iliosacral strain. Four days later he was taken ill while at work and was picked up by the police and taken to the City Hospital, where it was found that he had pleurisy. The condition went on to pneumonia and about two months later he developed empyema, was operated on and died. The insurance company's physician and I both stated that the case was not caused by trauma. Some months later his widow brought action and put her physician on the stand. He stated that the twisting motion which caused the iliosacral strain could at the same time have strained the chest and caused friction of the pleura, which, though slight, might have caused a lesion of the pleural surface, and if there were any germs at that point, they could easily have entered, or if in the blood they could have entered afterward through that means, and it was easy to assume that the resulting pneumonia came from that action. The point is that, even though the infection may be gonorrheal in these cases of orchitis, the men were hired with the condition or had it previous to the injury, and if the injury is shown, the intention of the compensation law is to protect the man from these consequences. If he sustains an injury when he has a gonorrheal infection, the consequences are no different from those of an injury in any other infection.

DR. MILEY B. WESSON, San Francisco: Physicians are not interested in the justice, equality and politics of such industrial cases as have just been mentioned, but only in keeping etiology and pathology pure.

WHOOPING COUGH

VACCINE THERAPY OR EARLY DIAGNOSIS *

LOUIS W. SAUER, M.D.
AND
LEONORA HAMBRECHT, A.B.
EVANSTON, ILL.

Although whooping cough causes more deaths than do most of the other communicable diseases of childhood, it differs from them in that it is fatal only for the very young and that the immediate cause of death is nearly always a secondary infection. In the forty-three registration states it caused 9,058 deaths in 1926. This is 908 more than the deaths from diphtheria, 1,368 more than the deaths from measles, and 6,463 more than the deaths from scarlet fever. During 1927 New York State reported 16,231 cases with 478 deaths; Illinois, 11,439 cases with 306 deaths. The latter is 342 less than the state's reported diphtheria deaths, and 137 more than those attributed to scarlet fever. In 1927, New York City reported 6,052 cases and 279 deaths; Chicago, 4,736 cases and eighty-five deaths. The actual number of cases of whooping cough and deaths in any community is much greater than the registration figures indicate, since many cases not seen by physicians are not reported, and some of the deaths due to subsequent complications are recorded under respiratory or gastro-intestinal diseases. In spite of fluctuations in the morbidity and mortality rates from year to year, the curves often run quite parallel (fig. 1). A downward trend, however, is noticed for city, state and country. In Denmark, where notification has been compulsory for many years, Madsen [1] found the number of deaths per hundred thousand inhabitants 38.2 from 1890 to 1899; 29.3 from 1900 to 1909, and 19.4 from 1910 to 1919, a decrease in mortality of about 50 per cent. Of the 42,655 deaths attributed to whooping cough by the United States Public Health Service between 1918 and 1924, more than 54 per cent were in children under 1 year of age, and about 25 per cent were in children less than 2 years old (fig. 2). Most of these deaths were due to secondary bronchopneumonia, enteritis or convulsions.

Although no age is exempt, all analyses show that whooping cough usually occurs before the school age. In a recent series of 100 private patients, the age distribution was six under 1 year of age; fifteen under 2 years; ten under 3 years; twelve under 4 years; six under 5 years; twenty-three in the kindergarten year; ten during the first school year, and only eighteen between 7 and 10 years (fig. 3). The average age was about 4 years. Seventy-two per cent were below school age; in fact, 3 per cent more had the disease before their second birthday than after the first school year. Relatively few children contract pertussis after the first year at school because the majority are already immune.

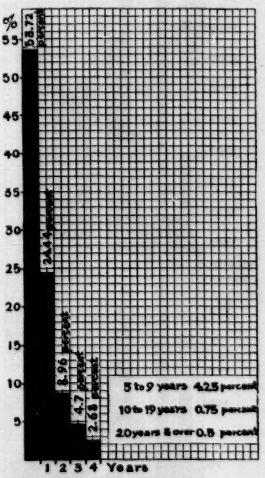


Fig. 1.—Age distribution of 42,655 whooping cough deaths in the United States in four years.

Many reports on the value of pertussis vaccine as a therapeutic agent are contradictory and of little scientific value because they usually lack proper control material. Many deal with institutional children over 3 years of age, whose histories are often incomplete or questionable. The potency, age, preservation and dosage of the vaccines vary. The stage of the disease at which it is given, the number of injections and the interval between injections are seldom alike. With so many variables, contradictory results are unavoidable. Pertussis vaccine is used rather extensively in Belgium and Denmark, and scarcely at all in Germany and Austria. It is lauded more by practicing physicians than by pediatricians in medical schools or physicians in charge of institutions in which young children are housed. During the sixteen years since its introduction, many authorities have abandoned it [2] or question its worth as a therapeutic agent. If its action is specific, why are sedative drugs, ether injections, roentgen therapy and heliotherapy also resorted to? The object of the injections is to hasten natural antibody production. All

* From the Evanston Hospital.

1. Madsen, T.: Whooping-Cough: Its Bacteriology, Diagnosis, Prevention and Treatment, Boston M. & S. J. **192**: 50 (Jan. 8) 1925.
2. Pospischill at the whooping cough hospital in Vienna abandoned vaccine therapy years ago.

pertussis vaccine as administered today is given too late for sufficient antibody production or at a time when the body is already overwhelmed with the living bacilli and their products. Some maintain that the nonspecific action of the protein in the dead bacilli may be of value. Careful work with a standard technic and proper controls is necessary before conclusions can be drawn.[3]

The most extensive observations on the use of vaccine were made by Madsen [1] and co-workers of the Danish Serotherapeutic Institute at Copenhagen. Their observations were made during a severe epidemic in 1923 in the Faroe Islands (north of Scotland). Here 2,094 patients were given three injections of a potent vaccine (5, 7 and 10 billion bacilli) at four day intervals. Six hundred and twenty-seven patients did not receive the vaccine. The mortality among the latter was twelve times as great as among the vaccinated. Unfortunately, no mention is made of the age of those who died, the season of the year when whooping cough occurred in the unvaccinated controls, or the hygienic conditions and nursing care of the two groups. It is well known that these and other factors to be discussed are very important in the prognosis of this disease. A group of 364 susceptible children were given the three injections by the Danish investigators, but "in spite of this they all, without exception, caught whooping cough within one to three months." They conclude that "no absolutely sure prophylactic effect has been obtained, even though it cannot be denied that in many instances fewer cases of infection are observed. . . . Vaccination is most effective when given about a week before the disease breaks out."

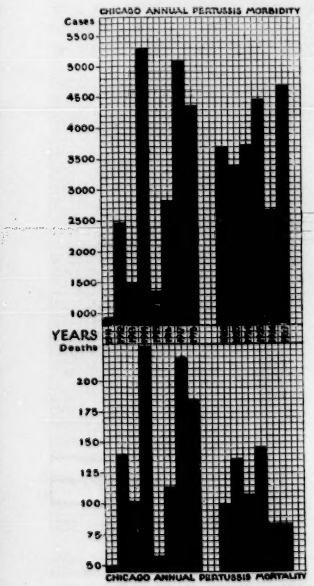


Fig. 2.—Chicago's annual whooping cough morbidity and mortality. The yearly fluctuations in mortality usually coincide with the morbidity.

As we had used commercial vaccines rather extensively with questionable benefit in the ten years previous to this study, freshly prepared vaccine was resorted to. The 100 patients referred to were given, as early as possible, three subcutaneous inoculations of fresh vaccine. At first injections of 1, 2 and 3 billion of killed *B. pertussis* (Bordet-Gengou) were given at three day intervals; very soon, however, the dosage was increased to at least 3, 4 and 5 billion bacilli. This vaccine was often less than 1 month, seldom more than 2 months old. It was prepared from newly isolated strains from typical cases. The bacilli were grown on Bordet-Gengou medium containing defibrinated human blood. They had the characteristics of the Bordet-Gengou bacillus described in table 1. The growth was scraped off and added to physiologic solution of sodium chloride containing 0.5 per cent phenol, and preserved at from 10 to 15 C. Repeated tests proved its sterility. The hyperemia at the site of injection usually persisted for twenty-four hours but never led to abscess formation.

TABLE 1.—*Differences Between B. Pertussis and B. Influenzae*

B. PERTUSSIS (Bordet-Gengou)	B. INFLUENZAE (Pfeiffer)
MORPHOLOGY	
A small, gram-negative ovoid nonmotile bacillus that frequently shows bipolar staining. In frequent subcultures the organisms may appear as cocci. The tendency to pleomorphism is not marked.	A small gram-negative, nonmotile bacillus that shows a marked tendency to pleomorphism. Polar staining may be present but the ovoid bacillus with the stained ends, so characteristic of the B.-G. bacillus, was never observed.
APPEARANCE OF COLONY	
At the end of two or three days on B.-G. medium, colonies appear to the naked eye as tiny, glistening mercury droplets. They are markedly raised, definitely circular in outline and not transparent. Hemolysis is usually present after two days. This zone appears distinctly light in transmitted light and somewhat darkened in reflected light. Old colonies may appear somewhat fuzzy, and when picked off leave the outer rim of the colony intact. Greenish discoloration of the medium was not observed. The organism grows slowly at room temperature.	Colonies are, as a rule, flat, transparent and irregular in outline; they are often umbilicated or show a slight elevation at the center. Some strains show hemolysis. There is greenish discoloration of the medium. Grows well in symbiosis with other organisms.
ASCITIC AGAR	
Grows quite well. It is not necessary to accustom the organism to this medium. The surface should be well broken with the loop, and at the end of the fourth or fifth day growth is visible around the loop markings.	Does not grow.
PLAIN AGAR	
No growth, even with the oldest strains. Bordet claims that the organism will grow if accustomed to medium containing less and less blood.	Does not grow.
CHOCOLATE AGAR	
Grows poorly, if at all, in transfers made from original plate.	Grows well.
VIABILITY OF CULTURES *	
Always viable at the end of a month of cold storage. In one instance growth was obtained from a slant that had been kept in the icebox for five months.	Dies out in about a week of cold storage.

* Inoculated sterile dust, and sterile filter paper saturated with a salt solution suspension of the B.-G. organism, did not show any viable bacilli after two days at room temperature; inoculated sterile saliva did not show any viable bacilli after the sixth day. A three day growth of the B.-G. organism was scraped from blood agar slants and dried for three days in a desiccator. An equal quantity of dried sterile salt was added. After seventeen days at room temperature, viable B.-G. bacilli were found.

In none of these 100 children was the disease prevented. Quite a number of patients were given the vaccine very early—in fact, before the blood counts or coughs were typical. Five of six infants exposed to older patients in their households received three inoculations during the catarrhal or early paroxysmal stage, but all developed severe pertussis. Four nonexposed, unvaccinated, susceptible infants, in families with exposed susceptible children, were isolated from the latter before

3. The present status of vaccine therapy may be illustrated by a recent incident. Two children, aged 2 and 3½ years, who had not had whooping cough, played indoors for an hour with a child. As the child was leaving it coughed in paroxysms. The following day the mother of the two children learned that this child was in the third week of whooping cough. During the hour of exposure the patient did not cough. The anxious mother called a neighboring physician, who advised immediate injection of pertussis vaccine. Fearful of injections, the mother called another physician, who said that the vaccine should not be given until a cough developed. Perplexed, the mother sought the counsel of an eminent physician in the large eastern city in which she lived, who said the vaccine was of no value and should not be given. The children did not develop whooping cough.

the catarrhal stage. None of these infants developed pertussis. A mother with pertussis in the household had a severe paroxysmal cough when admitted to a maternity hospital. She was isolated, and blood counts and the subsequent course of the disease proved that she was in the paroxysmal stage of pertussis. Her prematurely born infant was at once isolated for six weeks.

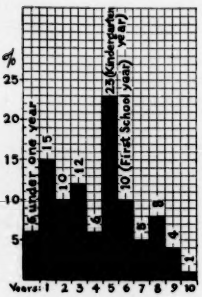


Fig. 3.—Age distribution of 100 consecutive private patients.

The infant received its mother's milk (pasteurized); no vaccine was given, and the child did not contract the disease. This mother and two of three other mothers who developed clinical pertussis from their children had not had pertussis earlier in life. A father, who contracted the disease from his barber (who was coughing and whose children had pertussis), gave it to his 4 year old son. A patient of 6 had had severe pertussis before the age of 2; in the second attack Bordet-Gengou bacilli were found on his cough-plates, and within two weeks his playmates next door contracted the disease, presumably from him.

A mother's fear of casual outdoor exposure may be unwarranted, as many unvaccinated susceptible children who were presumably exposed did not contract the disease. Children considered exposed may not have been actually exposed. The susceptible child may not have been in close enough contact with the patient; the patient may not have been expelling bacilli at the time of contact, or he may no longer be disseminating the bacilli. The inoculation of such susceptible children with pertussis vaccine would have led to the erroneous conclusion that the vaccine had prevented the disease. There is no natural immunity to pertussis—children presumably susceptible and definitely exposed, who do not cough in typical paroxysms, may have the disease in an atypical form or they may have had it earlier in life and are immune.

During this period observations were made on the severity of the clinical course in about 100 infants and children with pertussis in six institutions. None had received vaccine injections. About 70 per cent were under 1 year; 15 per cent, under 2 years; and the remainder, between 3 and 10 years. The average age was below 3 years. In one institution with more than fifty infants, all contracted the disease. This pandemic was at its height in midsummer. Most of the patients were anemic and underweight, and many had florid rickets. More than half contracted enteritis, and this was followed by bronchopneumonia in most of the fatal cases. The mortality exceeded 30 per cent. No deaths occurred among the forty infants and children in the five other institutions. In a primitive nursery ten artificially fed, rachitic infants contracted whooping cough in midwinter; one developed bronchopneumonia and convulsions, but recovery was complete within a few weeks. All susceptible infants and children in a small, colored day nursery contracted the disease without complications. In another institution housing several hundred orphans of school age, about ten of the younger children developed whooping cough simultaneously. They were isolated for about a month. None of these nor any of the older children were given vaccine. New cases did not develop in spite of ample exposure. If the institution with the high mortality from enteritis is excluded, the clinical course in the remaining fifty institutional patients (including twenty-five infants under 2 years) compares very favorably with the course in the 100 children who received three injections of vaccine. About 30 per cent of both groups had the disease in mild form; in about 50 per cent it was of average severity and duration, and in the remaining 20 per cent, complications of one kind or another occurred. Such variation in the severity of the disease in the vaccinated and the unvaccinated makes it difficult to evaluate vaccine therapy.

The simultaneous occurrence of mild and severe whooping cough in families who received the vaccine, and in the institutions in which no vaccine was given, indicates that the course is more dependent on the immunity response of the individual and his ability to resist secondary infections than on the virulence of the strain or the influence of vaccine. The high mortality during infancy, when the morbidity rate is relatively low because of lack of exposure, is primarily due to the infant's inability to ward off secondary infections. Aside from the age, other subjective factors, such as the previous health, nutritional state, appetite and stability of the central nervous system, seem to influence this immunity response. External factors, such as the season of the year, the food, exposure to secondary infections (colds, influenza, enteritis), and nursing care, are equally important. Infants and young children should have aseptic nursing to prevent secondary infections. Protraction was most frequent in artificially fed infants and delicate young children. One unvaccinated infant contracted bronchopneumonia and recovered within a few weeks; one of the five vaccinated who had this complication died. Bronchitis with persistent localized râles over one or both lungs, enlarged bronchial glands, or emphysema could be detected in most of the

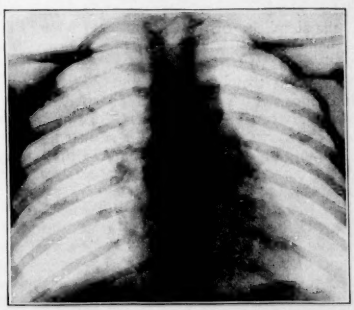


Fig. 4.—Appearance of chest during the height of the paroxysmal stage of whooping cough. There is a marked enlargement of the root shadows on both sides; the lungs are emphysematous. A roentgenogram taken after complete recovery did not show these conditions.

severe cases without bronchopneumonia. Figure 4 shows the chest of a child with severe whooping cough; there were coarse and fine râles throughout both lungs, but there was no area of consolidation.

In more than 40 per cent of our patients, medical aid was not sought until the characteristic whoop was quite well established. Laboratory aid is our sole means of

diagnosis before the characteristic cough. White and differential blood counts were made on most of the patients. Early in the catarrhal period, counts seldom deviated from the normal, but, as the disease progressed, the count as a rule increased. It usually, but not invariably, approached or exceeded 15,000 per cubic millimeter by the second week of the paroxysmal stage. This increase usually progressed until the height of the paroxysmal stage. In several instances counts exceeded 50,000 per cubic millimeter. The most accurate differential counts were made from thin, even, well stained smears in which the entire drop was spread on the side. By beginning at the left end and counting to the right until 100 cells are counted, and then beginning at the right and counting 100 cells to the left, a correct estimate of the various kinds of cells may be obtained. Lymphocytes invariably predominated. In complicating bronchopneumonia, counts were high but the proportion of lymphocytes was lower. In some mild but unquestionable cases the white cell counts never exceeded 10,000 per cubic millimeter. In no mild, uncomplicated case was the count very high; in no severe case was it low. Children who have had pertussis may cough in typical paroxysms during succeeding winters, without typical blood changes.

TABLE 2.—*Percentage of Positive Cough-Plate Cultures at Various Stages of Pertussis*

Stage	Chievitz and Meyer (914 Cases)	Lawson and Mueller (510 Cases)		Sauer and Hambrecht (100 Cases)	
	per Cent Positive	No. of Cases	Per Cent Positive	No. of Cases	Per Cent Positive
Catarrhal	75	91	59	34	97
Paroxysmal	..	..	..	50	50
First week	57	90	53	..	..
Second week	61	207	33	..	..
Third week	45	47	38	..	..
Fourth week	40	34	15	..	..
Decline	9	41	5	16	0

Bordet's method of isolating the bacilli from the pearls of mucus from the deeper parts of the respiratory tract has not become popular as a diagnostic aid. It lacks the simplicity of the Chievitz and Meyer [4] cough-plate method. The latter is a most excellent aid in the early diagnosis of whooping cough. The medium used is the same as that of Bordet and Gengou with slight modifications. Five hundred grams of sliced potatoes is thoroughly cooked in 1,000 cc. of distilled water and 40 cc. of glycerin. The volume is adjusted to the original amount, and the mixture is filtered through gauze. To 500 cc. of this extract 1,500 cc. of a 0.6 per cent salt solution and 60 Gm. of agar are added. The medium, unadjusted and unfiltered, is stored in 200 cc. bottles. Defibrinated human blood is added in the proportion of one part of blood to four or five parts of medium. One plate is all that is needed for each patient. Glass petri dishes are used because they enable one to view the hemolysis. The plate is held about 4 inches from the patient's mouth and he coughs directly on it. Not only is the culture more likely to be positive if exposed early, but the number of colonies which appear will be greater. Aside from the economical feature, this method is simple, clean and easily executed. Plates should, whenever possible, be freshly prepared, and this can readily be done if one has the agar and the blood on hand. It is advisable not to use plates more than a week old, for the surface of the medium soon dries out, making it more difficult for the Bordet-Gengou organism to gain a foothold. Table 2 gives the percentage of positive cultures in the various stages of whooping cough by the use of this method. Chievitz and Meyer used defibrinated horse blood and Lawson and Mueller [5] citrated horse blood; in our series, defibrinated human blood was used. The greatest number of positive plates was found during the catarrhal and early paroxysmal stages. The scarcity of the bacilli after the fourth paroxysmal week can be seen by the small percentage of positive cultures.

Some pitfalls of early diagnosis may be noted: The history of exposure may be vague or denied; the mother's description of the cough may be misleading; early white and differential blood counts may be within normal limits; the patient seldom coughs characteristically during the physician's visit, in spite of gagging, pressure on the larynx or trachea, the drinking of cold water, laughing, running or crying. Bronchial or laryngeal coughs in children who had pertussis previously may closely resemble active pertussis. Infection with distemper bacilli may simulate clinical whooping cough. Brown [6] recently reported such a case. The distemper bacillus, however, is motile, and growth appears within twenty-four hours on plain agar as well as on the Bordet-Gengou medium. Second attacks of pertussis are rare but do occur. The presence of the Bordet-Gengou bacillus is conclusive. Immune mothers and nurses in intimate contact with pertussis patients were found not to harbor the bacilli. Mild cases yielded positive cultures. In no patient in the period of decline was the bacillus recovered, and in none of twenty children without pertussis could the germ be found on exposed cough-plates. *B. influenzae* were found in patients not suffering from pertussis as well as in those that had the disease. In a fatal case in the third paroxysmal week, *B. pertussis* was found in the tracheal wall above the bifurcation, and *B. pertussis* and *B. influenzae* were recovered from consolidated areas of the lung.

Every clinician knows the added difficulty of diagnosing pertussis in instances in which some other infection exists. In a recent epidemic of cervical adenitis during a pertussis epidemic, blood counts were found to be misleading. In several such instances the cough-plate settled the question. After Martha B., aged 5, had been confined to her bed for more than a month with cervical adenitis, accompanied by fluctuations in temperature, a distressing nocturnal cough developed. The reaction to the cutaneous tuberculin test was negative; the white cell count was 25,200. The cough-plate showed more than fifty colonies at the end of the third day. When the mother was questioned it was found that on several occasions a playmate (who was supposed to have recovered from pertussis) had come to visit the child. Within two weeks after the exposure of the plate, the child had typical paroxysms.

Sidney J., aged 4, was suffering from cervical adenitis accompanied by a fever. His throat was much inflamed and he had been coughing a number of weeks. The white cell count was 22,100. He was not confined to his home. The first cough-plate, which had been poorly exposed, was negative. A second plate showed more than 100 colonies of *B. pertussis* on the third day. The adenitis and throat improved as the cough grew worse.

4. Chievitz, T., and Meyer, A. H.: Recherches sur la coqueluche, Ann. de l'Inst. Pasteur **30**: 503, 1916.

5. Lawson, G. M., and Mueller, Mary: The Bacteriology of Whooping Cough, J. A. M. A. **89**: 275 (July 23) 1927.

6. Brown, J. H.: Bacillus Bronchisepticus Infection in a Child with Symptoms of Pertussis, Bull. Johns Hopkins Hosp. **38**: 147 (Feb.) 1926.

The cough-plate places the diagnosis and quarantine period of whooping cough on a scientific basis. The Copenhagen Health Department, various institutions, and students of the disease find it a most convenient and reliable method for accurate, early diagnosis. Clinicians had long noted that the most contagious period is during the catarrhal and early paroxysmal stages. The cough-plate method substantiates this, for the earlier in the disease that plates are exposed, the more likely will they be positive (table 2). The genesis of a recent, suburban epidemic illustrates the menace of late diagnosis:

Margot M., a 4 year old parochial kindergarten pupil, rode in the school bus twice daily with her older sister and a dozen other girls. The older sister, aged 8, had been exposed to pertussis about a month previously, and had coughed somewhat at night for several weeks. Both girls attended classes regularly. In spite of rather severe paroxysms and increasing conjunctival hemorrhages, Margot attended school and went to a number of parties, attended by children aged from 4 to 8 years. When she was first seen by a physician, the white blood count was 24,850, with 54 per cent lymphocytes. A cough-plate showed several colonies of *B. pertussis;* a plate of the older sister was negative, and one for a 2 year old sister who had been having a rhinitis and slight cough was laden with colonies of the Bordet bacillus. She developed severe pertussis in spite of three early injections of potent vaccine, and, after several weeks, contracted bronchopneumonia, from which she slowly recovered. A number of susceptible classmates and playmates developed the disease during the following weeks. Immediate isolation after the exposure of the eldest child and early diagnosis by the cough-plate might have prevented this epidemic.

An unquarantined patient exposes many susceptible children during the two weeks of the catarrhal and the first few weeks of the paroxysmal stage. If only one susceptible child is exposed during each of the six weeks, and if none of the exposed are quarantined, but each, in turn, exposes one susceptible child during each succeeding week (after one week of incubation), thirty-one cases of whooping cough will have developed within the six weeks that the original patient is contagious. The distribution of these cases would be five in the late paroxysmal, six in the early paroxysmal, seven in the catarrhal, and thirteen in the incubation period. If one exposure occurs from each exposed susceptible child before diagnosis and quarantine are established, seven new cases would occur before the original patient would cease to be infectious.

The high mortality rate in pertussis patients under 2 years of age warrants recourse to all known means of early diagnosis. Infants and very young children should be protected from patients and exposed, susceptible children. This can be done only by early quarantine. If health departments would include in their service whooping cough diagnosis by means of the cough-plate, an earlier diagnosis could be made and an earlier quarantine established.

SUMMARY

Whooping cough and its complications cause more deaths than do diphtheria, measles or scarlet fever. Three injections of potent vaccine did not prevent the disease in definitely exposed susceptible children. Vaccine therapy had little if any influence on the course of the disease in 100 patients. The cough-plate method of Chievitz and Meyer is simple and reliable and should be made available for early diagnosis. Early diagnosis and prompt isolation of the patient and exposed susceptible children are, at present, the only reliable means of reducing morbidity and mortality.

CONCLUSION

Since vaccine is of doubtful value, the earliest possible diagnosis followed by the strictest quarantine is the chief means of combating this malady, so fatal for the young child.

636 Church Street.

END-RESULTS OF EXTRA-ARTICULAR FIXATION OF THE TUBERCULOUS HIP IN CHILDREN *

F. C. KIDNER, M.D.
DETROIT

Surgical fixation of the hip for tuberculosis in children is justified only on the hypothesis that this disease, when cartilage or bone is involved, is never cured with useful motion. This hypothesis I believe to be true. Whether or not there exists a type of tuberculosis of the hip which involves only the synovia and does get well is still open to discussion.

I am well aware that this hypothesis is not universally accepted. Such eminent authorities as Sir Henry Gauvain of England insist that even badly injured joints, with abscess formation, do heal completely. He says that they heal permanently, albeit with altered joint contours, with fair degrees of useful motion. He states that the diagnosis of tuberculosis in such cases has been proved by pathologic examination of tissue and by the recovery of tubercle bacilli, and that the only treatment necessary is rest and hygiene. Rollier too, in Switzerland, presents many cases of tuberculosis of the hip apparently permanently cured entirely by heliotherapy. How much useful motion these hips have is not clear. Certainly Rollier's course of treatment takes a very long time.

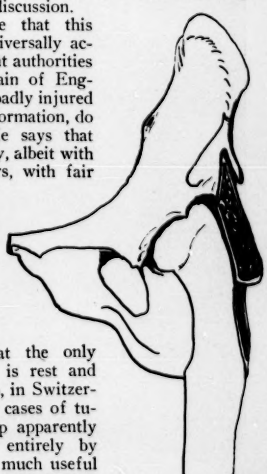


Fig. 1.—The Hibbs method of juxta-articular arthrodesis. The trochanter is split in the sagittal plane and inverted. Good contact with the neck is obtained.

On the basis of American experience it is possible to explain these statements only by the assumption that there is a difference in the virility of the infection here and in England; that the process is less destructive there.

Whatever may be the success of the overseas surgeons in obtaining cures with useful motion, it is nevertheless certain that in this country more and more surgeons are swinging to a belief in the hypothesis stated at the opening of this paper; namely, tuberculosis of the hip does not get well with useful motion. Under conservative treatment, symptoms disappear per-

* From the Orthopedic Clinic of the Children's Hospital of Michigan.
* Read before the Section on Orthopedic Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

manently only because of firm bony union and a stiff hip in good position. Less happily, the symptoms of the disease disappear because of fibrous union. If either bony or fibrous union occurs in bad position, then limp, pain and disability increase year by year. If the union is only fibrous, then any new trauma may awaken the dormant disease, and acute symptoms may come back. As Calvé [1] has so neatly said, "When the disease is cured, then the troubles begin."

Because the results of conservative treatment were bad unless bony fixation occurred, surgeons of late years have sought for a means to cut short the disease, and at the same time secure a useful hip. Excision of the diseased head of the femur was first tried thirty years ago. It was found that this procedure failed in

Fig. 2 (case 1).—Typical Hibbs procedure with complete cure in spite of fracture of the femur. This fracture is responsible for abduction, which interferes somewhat with the function.

both objects. Rarely was the disease eradicated, and when it was eradicated there resulted a completely unstable hip.

Next came intra-articular fixation or arthrodesis. Farrell [2] in 1919 reported ten cases in which he had tried arthrodesis in tuberculosis without success. The reason for failure of this type of operation, in tuberculosis, is that it is impossible to get enough healthy bone in contact within the diseased joint.

This fundamental weakness in arthrodesis as a means of fixation of the tuberculous hip led to the realization that masses of healthy bone must be brought in contact. These could be obtained only outside the diseased joint, and the operation therefore must be essentially extra-articular.

1. Calvé, J.: J. méd. franç., 1925, p. 26.
2. Farrell, B. P.: J. Bone & Joint Surg. **7**: 563 (July) 1925.

Two types of extra-articular operation appeared. The first, called for convenience the para-articular method, involved the use of grafts usually taken from the tibia and embedded in the side of the ilium and in the trochanter at a considerable distance from the joint. Perhaps the first successful operation of this type was done by Maragliano [3] on a child of 7, in 1913. In 1919, when a previous operation for implantation of the trochanter into the acetabulum had failed, he fixed the upper end of the diaphysis of the femur to the ischium with a graft, without success.

Kappis,[4] in 1920, implanted an osteoperiosteal graft from the tibia into the trochanter and the crest of the ilium. He insisted on the vital importance of the periosteum. In 1924 he reported twenty cases, in some of which the graft broke. He insisted on very long postoperative fixation.

Albee,[5] in 1925, placed tibial struts from the crest of the ilium to the trochanter. Báron,[6] in 1921, turned a flap down from the ilium and another up from the trochanter. Between these he fastened an osteoperiosteal graft from the tibia.

The second type of extra-articular fixation is called the juxta-articular. Of this type the best example is the Hibbs [7] procedure. J. Haas [8] of Vienna reported three cases in 1922 in which he implanted the greater trochanter into a groove in the ilium without opening the capsule. He sutured the trochanter to the shaft and to the ilium. In 1926, Mathieu and Wilmoth [9] described an operation similar to that of Báron, and another in which the trochanter is slid up under the pelvic flap. Hibbs, however, has perfected the method of transposition and rotation of an osteotomized vertical wedge from the trochanter without removing muscle attachments, so that it has bony contact with its own stump, with the roughened superior surface of the femoral neck, and with a trap door groove in the side of the ilium. Periosteal continuity is maintained superficially. The transplant is held in place by the compression of the forcibly abducted upper end of the femur. This procedure unquestionably fulfils more of the requirements for extra-articular fixation of the hip than any other. With modifications necessitated by the individual case, it is applicable to a greater variety of types of hip tuberculosis than is any other method. This applicability is much wider than the original article by Hibbs leads one to suppose. The persistence of a considerable femoral neck was emphasized. As a matter of fact, this is not at all necessary to successful fixation.

After hearing Dr. Hibbs read his paper at the American Orthopedic meeting in May, 1926, I was impressed by the fact that for the first time a reasonable method for surgical fixation of tuberculous hips had been found. This fact was particularly satisfactory to me because of my firm conviction that surgical fixation offered the only rapid and reliable cure for tuberculous hips. I began immediately to use the Hibbs fixation operation.

CASE 1.—A boy, aged 14, who was the first patient in whom I used the Hibbs fixation operation, had disease of the left hip. He had been under my care as a private patient for six

3. Maragliano, D.: Chir. d. org. di movimento **5**: 225 (April) 1921.
4. Kappis, M.: Zentralbl. f. Chir. **48**: 990 (July 16) 1921.
5. Albee, F. H.: Reconstruction and Plastic Operations on the Hip, J. A. M. A. **85**: 1345 (Oct. 3) 1925.
6. Báron, A.: Zentralbl. f. Chir. **48**: 1047 (July 23) 1921.
7. Hibbs, R. A.: J. Bone & Joint Surg. **8**: 522 (July) 1926.
8. Hass, J.: Zentralbl. f. Chir. **49**: 1466 (Oct. 7) 1922.
9. Mathieu and Wilmoth: J. de chir. **28**: 130 (Aug.) 1926. Mathieu, Paul: Rev. d'orthop., 1926, p. 581.

years. He had always followed directions and had therefore had continuous treatment of the conservative type. Rest in bed with traction, heliotherapy, abduction and traction splints and plaster-of-paris casts had been conscientiously used. In spite of these measures, the disease had progressed steadily. For the first three years bone destruction as shown by roentgenograms had been absent, and I felt that this case represented a synovial tuberculosis, in which there might be recovery with useful motion. At the end of three years bone destruction began, and progressed slowly until at the time of operation the head of the femur and the upper part of the acetabulum were almost completely destroyed. The neck, however, was fairly well preserved. At no time during the progress of the disease had there been the slightest tendency to ankylosis. Motion remained almost normal.

Six years of conservative treatment without improvement, but with steadily increasing destruction, was enough to convince the family that operation was worth a trial. This was therefore undertaken in May, 1926. The operation was difficult because the patient was very fat. The Hibbs technic was followed closely. In spite of this, the destruction of the upper part of the acetabulum and of the head made it impossible to avoid the invasion of tuberculous tissue in the upper part of the joint. Some of this was excised, and proved to be tuberculous by laboratory examination. This invasion of the tuberculous tissue, and the fact that the undersurface of the transplanted piece of trochanter and shaft lay in contact with this tissue and formed a bridge over it, made me fearful for the result. This fear was increased by the fact that the femur was broken at the original base of the graft when abduction for fixation of the graft was undertaken.

In spite of these two accidents, good contact of the graft and good position of the hip were obtained. There were no untoward postoperative incidents, and convalescence was uneventful. New bone formation was very rapid and the x-ray examination showed complete bony union of the ilium to the graft, of the graft to the femur, and of the femoral fracture at the end of three months. Weight bearing was forbidden for three months more, but the boy was allowed about on crutches without splints. During this period the graft increased in size and became more dense. The ilium and upper end of the femur also showed greatly increased calcium content.

At the end of six months the boy was allowed to walk, and has done so ever since. He limps because of the shortening which resulted from the original destruction of bone and because of a little too much abduction due to the fracture of the femur. There is also too little flexion. There is no pain and no motion in the joint, nor any other symptom. The boy and his family are completely satisfied because he has been able to attend school and play unreservedly for two years, and because he has been able to work off some of his fat.

After our success in this case, my associates, Dr. R. V. Funston and Dr. F. E. Curtis at the Children's Hospital, and I cautiously began to apply this operation generally to tuberculous hips. At first we tried to pick our cases, confining ourselves to well grown children in whom the disease was inactive, and in whom a good femoral neck persisted. We soon found that these restrictions were unnecessary, and our only contraindication now is the presence of fresh open sinuses.

Sixteen patients were operated on between December, 1926, and October, 1927. These, with the first patient described, make a total of seventeen in whom sufficient time has elapsed to allow conclusions to be drawn.

The results show firm bone union except in cases 2, 3, 6, 11 and 17. In cases 2 and 17 this is due to the presence of free pus and widespread destruction. In case 3 bone union is present, but the union is still weak from the x-ray standpoint. In case 6 it is absent because the diagnosis of tuberculosis was wrong and there is still normal cartilage in the joint (Perthes' disease?). In case 11 it is absent either because the graft has broken or because the epiphyseal line of the trochanter is included, as in case 10. Good function is present in all but cases 2 and 17, in which union is incomplete. In all cases the progress of the disease and all symptoms have been stopped. In reviewing them, certain considerations, which I have not seen mentioned in the literature, stand out clearly; these are both preoperative and operative:

First, the age of the patient is unimportant. The youngest patient in whom the operation was successful was 4 years of age, the oldest, 14. At any age, growth after the operation seems to depend wholly on the amount of destruction occurring before the operation, and to be uninfluenced by the operation itself. Growth continues after operation if there was any epiphysis left before operation.

Fig. 3 (case 3).—Free bone transplant of trochanter in which a beef bone peg was necessary to hold the transplant in place. Note large size of graft.

Second, the duration of the disease is unimportant except as it determines the amount of destruction of the acetabulum and the femoral head and neck. In general, the greater the destruction, the greater the mechanical difficulty of the operation and the poorer the functional result. When there is great destruction, the space in which operative procedures can be carried out is much constricted and they are therefore more difficult. When the destruction is great, it is more difficult to obtain good bony contacts for the graft, which may have to function as a bridge, as it always does in the para-articular types of operation. With marked destruction, satisfactory functional position is more difficult to obtain, and the shortening produces a greater limp.

Third, activity of the disease in no wise contraindicates the operation. It does, however, sometimes deter-

mine whether or not solid fixation is to be obtained. In none of our cases did the fact that free pus and granulation tissue existed widely spread through the field of operation prevent primary healing. In no case was there a flare-up of the disease following the opening of active pockets of disease, nor was there a case of systemic dissemination of tuberculosis. This small series does not prove that it is safe to operate on active tuberculous joints, but, taken in conjunction with Baer's experience in arthroplasty in old tuberculous hips, it goes far to allay the tradition that it is very dangerous.

In five of our cases, free pus was encountered at operation. Of these, in three, union went on satisfactorily in spite of the pus. In two, cases 2 and 17, union is still absent after twelve months, but in both of these,

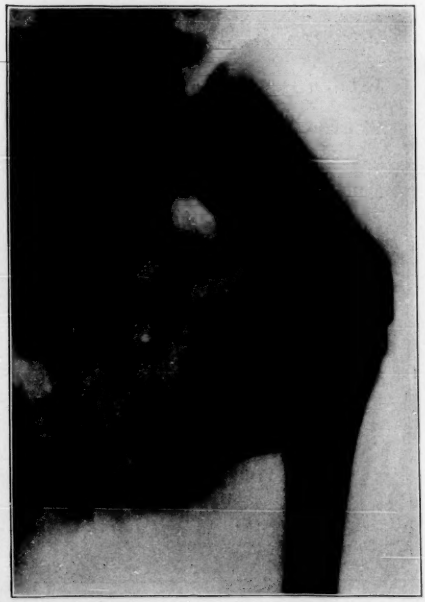


Fig. 4 (case 5).—Free bone transplant solidly united over completely destroyed joint; excellent function.

symptoms have disappeared and new bone is forming. There has not been any further spread of bone destruction. We believe that the graft across the top of the diseased joints acts as a barrier to the spread of the disease even though union does not occur.

In nine cases, lack of space resulting from destruction of the neck of the femur and from fibrosis of the muscles and soft tissues has forced us to use free grafts from the trochanter and the upper part of the neck. Of these, union has failed in cases 2 and 17 because of the lack of healthy bone and because of the presence of pus. In case 10, the union did not become solid for a long time, apparently because the trochanteric epiphyseal line was used as a part of the graft and allowed some spring. This fact was proved by a secondary exploratory operation. Absolute fixation has now taken place with a good result. In case 11, a clinical cure has resulted but there is an apparent fracture of the graft shown in the roentgenogram. This may be the trochanteric epiphyseal line, as shown in case 10.

The technic of the free transplant depends on conditions found at operation. Usually it consists of subperiosteal dissection of the fibrotic muscles from the top of the trochanter. By transverse osteotomy a triangular piece of bone is removed from the trochanter and upper end of the shaft, and this is then forced upward and inward into the best possible groove in the roof of the acetabulum. The previously dissected muscle flap is then sutured into place, anchoring the graft. The leg is placed in abduction, wedging the graft into place. This procedure is similar to that employed by Kappis in 1921. Although the contacts obtained by it may be poor, the graft grows and functions well. This proves that direct periosteal continuity is not necessary.

All patients in this series were placed immediately after operation in plaster-of-paris double spicas in from 20 to 40 degrees of abduction and a few degrees of flexion. They were all held in that position for from three to nine months. In spite of the most rigid attempts to maintain the abduction, all of them, except patient 1, have gradually acquired either the straight position between abduction and adduction or a few degrees of adduction. In all of them the flexion has increased, in some cases to 40 degrees. This fact was most humiliating to me because, in spite of many experiences to the contrary, I still felt that the stiff hip should be abducted. Even the oft repeated statements of Dr. E. G. Brackett [10] had not overcome my respect for the textbook statements that abduction overcame shortening and gave the best type of stiff hip. The fact remains, however, that, of the seventeen patients operated on in this series, all but three have excellent functional results as regards walking or sitting and all have a greater or less degree of flexion. Those with the greatest flexion and no abduction or adduction are the most comfortable. Whether this will be true when the children reach adult life is yet to be seen. The three cases in which there are bad functional results are cases 2 and 17, in which there is not yet solid fixation, and case 1, in which there is too much abduction because of the fracture of the femur.

The conclusions from this series of extra-articular fixations of the hip are as follows:

1. Assuming that tuberculosis of the hip does not heal without fixation, operative fixation should be done as early as possible, as regards both the age of the patient and the duration of the disease.

2. Extra-articular operation provides a means for early fixation.

3. The juxta-articular methods of Kappis and Hibbs, and the free graft described in this paper provide a better means than the para-articular method of Albee, Calvé and others.

4. It is safe to operate in the presence of active tuberculous disease, even with abscess, if there is no open sinus.

5. Even though fixation does not occur promptly after the operation, the graft provides an internal splint which relieves symptoms and prevents spread of the disease.

6. The operation in no way interferes with growth. Shortening following the operation is only that present before the operation. If the growth center has been destroyed before operation, relative shortening will

10. Brackett, E. G.: Boston M. & S. J., 1912, p. 235.

increase after operation. If not, the limb will keep up with its mate.

7. Flexion of from 20 to 40 degrees in midposition is the position of choice for these fixed hips.

8. The earlier the operation is done in proved tuberculosis of the hip, the less will be the shortening and the shorter the period of invalidism.

CASE 2.—J. K., a boy, aged 6, seen in September, 1924, had had pain in the hip for four months following a fall and had been treated by an osteopath, who had regularly manipulated the hip. On examination, the patient had pain and all the typical symptoms of an acute tuberculous hip. The roentgenogram showed marked calcium absorption but no destruction. The patient was treated for two and a half years as a well-to-do private patient with rest in bed, full heliotherapy, sun lamp and traction. The disease was peculiarly active, and acute exacerbations of pain were constant. Destruction as shown by x-ray examinations went on rapidly in the head, neck and acetabulum. There was no abscess.

An operation was done in February, 1927. The Hibbs procedure was attempted through a mass of tuberculous tissue. A bridge of trochanter was placed across the soft purulent material of the joint into the much softened and necrotic ilium

Operative Results by the Hibbs Method

Case	Name	Age	Duration of Disease Before Operation, Years	Pus at Operation	Typical Hibbs	Free Bone Transplant	Delayed Union	External Rotation	Fracture at Operation	Bone Peg
1	E. S.	14	6	..	+	..	..	..	+	..
2	J. K.	9	3	..	..	+	+	..	..	..
3	B. C.	10	5	..	..	+	..	..	..	+
4	E. K.	7	1½	..	..	..	..	..	..	..
5	G. W.	12	6	..	..	+	..	..	..	..
6	E. A.	11	3	..	..	..	+	..	..	..
7	S. G.	9	4	..	+	..	..	..	..	..
8	A. K.	11	6	+	..	+	..	..	..	..
9	I. L.	12	3	..	..	+	..	..	..	..
10	K. L.	4	2	+	..	+	+	+	..	..
11	P. B.	9	4	..	..	+	+	..	..	..
12	A. G.	11	6	+	..	..	..	..	..	..
13	J. G.	13	4	..	+	..	..	..	..	..
14	D. B.	14	11	..	..	..	..	..	..	..
15	B. K.	12	3	..	..	..	..	..	..	..
16	M. M.	8	3	..	..	..	..	..	..	..
17	E. R.	12	7	+	..	+	+	..	..	..

far above the normal limits of the acetabulum. It was held by abduction. Healing was by first intention.

In May, 1928, there was still 20 or 30 degrees of motion in the joint, but there had been only one acute attack of pain, which followed a fall. For six months following operation the patient was kept in a plaster cast. Since then he had been recumbent most of the time, but had been about on crutches for necessary locomotion about the house. Full heliotherapy had been continued. Motion was decreasing. X-ray examination showed that the graft was acting as a new roof to the acetabulum and was preventing further destruction. There was much new calcium deposit and new bone formation had begun.

CASE 6.—E. A., a girl, aged 8, was admitted in August, 1924, because of an acute infectious arthritis that had begun five weeks before. X-ray examinations were negative. She was treated with rest and traction until November, when x-ray examination first showed decalcification and flattening of the head. Gradually destruction continued and disability and pain were great. An exploratory operation was not conclusive.

Oct. 6, 1927, a typical Hibbs operation was easily carried out. There was no pus.

By May, 1928, the legs were equal. There was no adduction or abduction. Flexion was 15 degrees. Motion was still present.

This was probably not a tuberculous case and demonstrates that a graft will not hold across a joint in which normal cartilage is present. Roentgenograms taken in May, 1928, apparently represented an advanced Perthes' disease, with the graft completely ununited with the femur but finally united with the ilium.

CASE 10.—K. L., a girl, aged 2, was admitted, Jan. 27, 1925, because of pain and contraction of the left hip, which had been present for one month. Clinically, the condition indicated tuberculosis. X-ray examination was negative. The Pirquet test was positive. One month later a roentgenogram showed almost complete decalcification. The patient was treated with extension, rest and heliotherapy at the convalescent home until November, 1926. By that time there was complete destruction of the head, the neck and the upper part of the acetabulum with posterior dislocation.

An operation was done, Nov. 3, 1926, because of progression of the disease in spite of good treatment and the youth of the child. An incision down to the remains of the joint was made through scar tissue into the region of active disease.

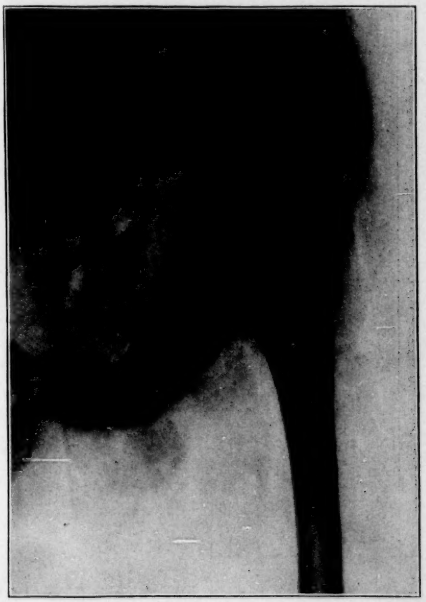


Fig. 5 (case 2).—Very active disease in which the graft is not united with the femur but has formed a roof which is preventing further spread upward of the disease in the acetabulum. The graft so limited motion that all symptoms have disappeared and healing is going on.

There was no room or anatomic structure to allow a typical operation. A free graft was cut from the top of the trochanter and shaft and forced into the groove partially in the diseased tissue in the ilium at the top of the acetabulum.

At the time the mechanics of the operation were felt to be poor, and the result was very doubtful. The hip was put up in plaster in abduction. During the ensuing year the progress of the tuberculosis was entirely halted. Pain and spasm entirely disappeared, but slight motion persisted. X-ray examination showed an apparent hiatus or fracture in the middle of the graft. In December, 1927, this was explored and found to consist of cartilage—probably the epiphyseal line of the trochanter. The graft was firmly united above and below and the motion was accounted for by spring in the cartilage.

In April, 1928, a physical examination did not show any motion or symptoms. There was 20 degrees of flexion, 10 degrees of adduction and 30 degrees of external rotation. There was only three-fourths inch of shortening.

The gait is excellent except for external rotation. The patient sits badly because of adduction and a rather stiff lumbar spine. In May, 1928, a roentgenogram showed bone union across the cartilage.

CASE 11.—P. B., a boy, aged 9, admitted, March 3, 1927, had pain and a limp that began in the right hip four years before. An abscess had formed which had drained for three years. It was healed one year. The patient showed a flexion adduction deformity. There was some motion in all directions guarded by spasm. X-ray examination showed complete destruction of the head with a spikelike stump of neck lying in a much enlarged acetabulum, the walls of which were deeply eroded by disease. The greater trochanter was in contact with the upper edge of the acetabulum. The deformity was overcome by corrective plaster.

Operation was performed, Oct. 6, 1927. Because of the proximity of the side of the ilium or roof of the acetabulum

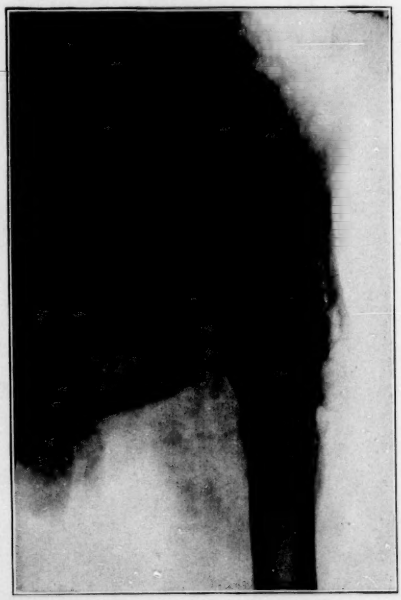


Fig. 6 (case 14).—Typical Hibbs procedure in which there was a good neck to make contact with the graft.

to the trochanter and the great destruction, there was no neck or joint capsule left. The operation, therefore, had to be carried out through the diseased tissue. A typical Hibbs operation was impossible. Therefore a slab of bone was cut, including the whole outer part of the trochanter.

The lower position of this was turned round and pushed into a groove just above the acetabulum in the ilium. The much diseased and scarred muscles were left attached. Abduction kept the graft in place.

In April, 1928, physical examination did not show any motion or symptoms in the joint. Ten degrees of flexion and adduction, 20 degrees of internal rotation and only 1 inch shortening were revealed. The patient was beginning to walk with a fair gait in which the worst factor was internal rotation. He sat well because of an extremely flexible lumbar spine. A roentgenogram showed apparent failure of the graft.

The question arises, Is this an epiphyseal line? The main points in this case were the operation through the diseased area; the fact that there was no room for good contacts of bone; the excellent result in spite of difficulties, and the presence of internal rotation and adduction with not enough flexion.

CASE 14.—D. B., a boy, aged 7, seen in November, 1919, gave a history of pain that had begun three years before in the right hip and had continued, causing him to limp ever since in spite of treatment in Buffalo in 1920. He was treated with extension and casts until 1922, when there was apparent firm union with 25 degrees of abduction without flexion. In 1923 an abscess developed which was emptied several times. By 1925 he was walking without support. In May, 1927, all symptoms recurred with muscle spasm.

An operation was performed in October, 1927. The head was destroyed but a fair neck was left. Much fibrous tissue filled the acetabulum. The muscles were fibrosed. A typical Hibbs operation was done.

By May, 1928, there was complete fusion of the graft and for the first time beginning fusion of the diseased head and acetabulum. There was no adduction or abduction, but 20 degrees of flexion was present. The gait was good. The patient sat well with some adaptation of the lumbar spine.

This case is a brilliant example of long continued conservative treatment without results.

1337 David Whitney Building.

ABSTRACT OF DISCUSSION

DR. FRANK R. OBER, Boston: It seems to me that the conservative measures which we have carried out in this country represent one of our real failures in the treatment of tuberculosis. Tuberculous hips, even after recovery, are prone to become permanently flexed. Such hips can be pulled out under traction in the line of deformity, and the patients sent to their homes to report at intervals to the outpatient department. Within from six months to a year the flexion contracture will have recurred no matter what our method of procedure may be. Finally, if nature is good, these hips will fuse. With regard to operative hip fusion, we must ask ourselves the question whether or not we are always justified in fusing hips, because, as we all know, some patients get well with a physiologic amount of motion, and Rollier reports good function by means of heliotherapy and special exercise methods. With regard to early operation, is there not some danger of complications, of breaking down the wound by tuberculous infection of the whole operative field, or may there not be a possibility of a complicating tuberculous meningitis? It does not seem to me that the amount of bone used in the Hibbs method of fusion is sufficient to stand the stress. Wilson of Los Angeles turns down a large flap from the ilium and puts it in a cleft between the greater trochanter and the shaft. I have been turning down the ilium in strips, so that the strips surround the upper end of the femur when the trochanter has been cleft back. In this way a real forest of bone surrounds the upper end of the shaft of the femur, enclosing the neck, and there is a real buttress extending from the ilium to the shaft of the femur. Such fusions have been more stable in my hands than the Hibbs fusion. If deformity is present, I do not see why it should not be corrected at the time of the operation.

DR. H. W. MEYERDING, Rochester, Minn.: This operation is designed to relieve the symptoms of tuberculosis of the hip and to prevent the deformity and shortening which have been very common in the treatment in the past. I believe that the principal thing we want to get in this operation is plenty of bone and bone contact to assure rapid fusion. I have been using bone grafted principally from the ilium, exposing the hip, neck and trochanter through a Smith-Peterson incision, splitting the trochanter and turning large sections of bone down from the ilium and, if need be, from the femur, so as to get good bony contact across the freshened trochanter along the neck, opening the capsule, if necessary, and getting a subperiosteal mass of bone. By stripping off, as in the Smith-Peterson incision, this is very simple to do. We operate in the face of old sinuses successfully, and we correct deformity at the same

time that we operate for fusion, applying a double spica cast to the knee on the well side and the toes on the affected side. Without doubt, this operation of fusion of the hip is going to be very commonly used, and with great success.

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: Dr. Kidner has clearly demonstrated excellent results in tuberculous joints by fusion. All the cases presented show conclusively destructive changes in the roentgenograms suggestive of tuberculosis. I should like to ask Dr. Kidner what he regards as sufficient evidence to indicate fusion. I myself cannot recommend routine biopsy in the hip joint when tuberculosis is suspected, and prefer at present to await the development of characteristic symptoms which may be confirmed by a roentgenogram before fusion is advised. In a series of eight cases, my colleagues and I have induced extra-articular fusion through the aid of bone flaps from the ilium and shaft of the femur, which is reinforced by a large osteoperiosteal graft from the tibia. The joint proper is carefully avoided. In very young children we have employed the homologous osteoperiosteal graft from the mother. In our cases fusion is not accomplished until a lapse of from six to eight months. Union seems to be delayed between the grafts and the trochanter, which is probably due to the fact that this is the point of greatest leverage. I have obtained two roentgenograms in the first two cases which demonstrate clearly fusion by a large mass of bone which is entirely extra-articular, the advantage of which over intra-articular methods is not refutable, provided the desired results can be accomplished as frequently. This, of course, remains to be proved.

DR. FRED H. ALBEE, New York: I do not believe that we should apply this treatment to cases in which the pathologic change is not extreme and there is not a great deal of destruction as shown by roentgen study. I have done arthrodesis of the hip in about 115 cases. The first fixation was done twenty-one years ago. I wish to emphasize the importance of putting in large grafts of ample length. I have done four types of operation for tuberculosis during the past fifteen years. One should select the type adapted to the individual case. When there is a large amount of destruction, and the great trochanter is approximated to the side of the ilium or the acetabulum, one does not need as long a graft as when it has not approximated. In a few cases in which intra-articular arthrodesis was unsuccessfully attempted, and in which the trochanter was especially near the side of the ilium, I did not use any graft at all because the limb was in every instance in marked adduction and it was found that after denuding the trochanter of soft parts and shaping it into a wedge, it swung (by adducting) under a large leaf of the outer table of the ilium, which had been elevated outward after being incised by motor saw at its lateral and inferior outlines. The upper outline is not incised, as the bone is sufficiently flexible to allow the lifting of the leaf or door to receive the freshened trochanter, which is thrust beneath it by the mere abduction of the limb. This is the simplest method and one in which a free graft is not used at all. The next simplest method may be employed in cases in which the trochanter is only about one-half inch from the side of the acetabulum, and one can use the outer table of the ilium as a sliding graft. A broad plate of bone, as wide as one likes, is slid down into the trochanter after the trochanter has been split in situ from above with a wide osteotome. In case the trochanter does not approximate the side of the pelvis or the rim of the acetabulum because of joint destruction, a graft from the ilium is not long enough, and in that case it is best to obtain two grafts from the tibia, according to the technic which I employed in 1913 and described in 1919. During the past few years I have planned every arthrodesis operation on nonarticular joints with the idea of making way as far as possible for a future arthroplasty for mobility. In several cases in which tibial grafts have been used, I have four or five years later removed the grafts and succeeded in establishing most satisfactory motion and function from arthroplasty.

DR. H. L. ALLEN, Indianapolis: These graft operations have their place, when much destruction is present. They are entirely out of place in many cases in children. Dr. E. O. Lindenmuth of Indianapolis says that there are three other men studying tuberculosis of the bones by means of x-rays. The rays are filtered, applied for about twenty minutes at a time and at intervals of abou. once a week for twenty-one treatments. Before I started on this treatment with hip disease, Pott's disease, or any other tuberculous inflammation or destruction, I first had him show me a few holes he had closed up in bones, and it seemed to me that they had closed rather promptly. I then tried the treatment in hip disease. These cases of hip disease, if there is not a multiple infection, respond beautifully and go on to recovery promptly. I am exposing myself to much ridicule. Maybe I have never had a tuberculous case. I do not mind admitting I have the smallest practice of any man I know, and I do not keep a livery stable full of guinea-pigs or other animals to test for the presence of tuberculosis in children. I simply try to be honest with them, and with you, and the more I see of these demonstrations, and hear the frank confessions that the men make who are doing the grafting operations, the more convinced I am that some people should be spared such operations.

DR. F. C. KIDNER, Detroit: Some one spoke about early diagnosis. I believe that the safe and only sure way to make a diagnosis is to operate early, and in practically all of our cases, when there is any doubt of the diagnosis, whether low grade infection or tuberculosis, we do a biopsy. Several of the questions that were brought up are discussed, and I hope answered, in the body of the paper, which I have had to summarize. The earlier the operation is done, the better. Many of the patients whose roentgenograms I showed came to me only very late, having been treated conservatively elsewhere.

BLASTOMYCOSIS

A PATHOLOGIC AND BACTERIOLOGIC STUDY *

I. D. MICHELSON, M.D.
MEMPHIS, TENN.

Blastomycosis was first recognized in the United States by Rixford and Gilchrist [1] in 1896. Since then, most valuable studies have come from Chicago, where the disease seems to be very prevalent or at least readily recognized. An extensive review of the literature is impossible in a paper of this scope, but the monographs of Ricketts [2] and of Stoddard and Cutler [3] and the numerous papers originating in Chicago may be consulted.

During the last five years I have had the opportunity of studying six cases of systemic blastomycosis and thirteen of the local skin variety. The diagnosis in each case was based on the clinical and bacteriologic observations. It was confirmed by the study of biopsies and the finding of the typical organism and cellular reaction in the tissue. All of the systemic cases ended fatally, while the local cases were cured under the administration of potassium iodide and the application of roentgen therapy. Recurrences or systemic invasion have not occurred in the local skin cases.

The results of my pathologic and bacteriologic observations form the basis of this report.

PATHOLOGY

The following is a brief summary of the clinical history and pathologic observations in a case of systemic blastomycosis, showing involvement of the thyroid:

I. L., a negro, aged 29, whose occupation was that of a farm laborer, became feverish and had a productive cough, in June,

* From the Departments of Pathology and Bacteriology, Pathological Institute, University of Tennessee.

* Read before the Section on Pathology and Physiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Rixford, E., and Gilchrist, T. C.: Two Cases of Protozoan (Coccidioidal) Infection of the Skin and Other Organs, Rep. Johns Hopkins Hosp., 1896. Gilchrist, T. C.: Ibid. **1**: 269, 1896.

2. Ricketts, H. T.: Oidiomycosis of the Skin and Its Fungi, J. M. Research **6**: 313, 1901.

3. Stoddard, J. L., and Cutler, E. C.: Torula Infection in Man, Monograph 6, Rockefeller Institute for Medical Research.

1924, which was followed by the appearance of a swelling on the right side of the face. Later the left hip became painful and swollen and finally involvement of the right knee occurred. In October, 1924, the right elbow became painful and swollen and was opened surgically, with the evacuation of a large amount of thick, sanguinopurulent exudate. Meanwhile tumors on the

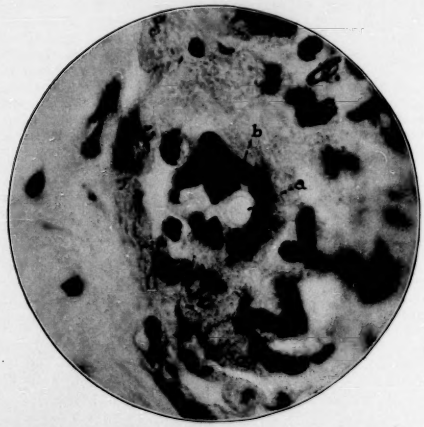


Fig. 1.—Section of an early lesion in the skin showing the first reaction of the body to the presence of Blastomyces: (*a*) a blastomyces; (*b*) mononuclear cells surrounding the organism; slightly reduced from a photomicrograph with a magnification of 1,000 diameters.

neck appeared, which gradually softened and were finally lanced. He had lost 50 pounds (23 Kg.) since the onset of the disease. He was admitted to the Memphis General Hospital, Jan. 21, 1925.

On physical examination subcutaneous abscesses were found over the right supraclavicular space, over the thyroid and over both lower extremities; there was arthritis of the left hip joint, the right elbow, and the right knee with sinus formation, and crusted, pustular and papular lesions were seen over the right eyelid, extending down to the right side of the nose and over part of the right jaw bone, with several sinuses exuding a yellowish, thick pus.

A diagnosis of blastomycosis was made by mixing pus and 20 per cent potassium hydroxide, which showed the spherical, doubly contoured, highly refractile, nonendosporulating organism. Cultures made from pus obtained by the aspiration of an unbroken abscess yielded *Blastomyces* of the smooth, yeast-like type. Guinea-pig inoculation proved negative for tuberculosis. A biopsy from the skin lesion on the right leg gave microscopic evidence of a blastomycetic infection. During hospitalization there developed a large number of subcutaneous lesions which ulcerated with or without the formation of sinuses. Involvement of the joints became more marked. Unilateral exophthalmos (left) and pinpoint contraction of the left pupil were noted, February 1. Physical and roentgen examination showed consolidation of the upper lobe of the right lung. The patient's condition became gradually worse, resulting in death, February 3.

The temperature ranged from 99.2 to 104.2 F., the pulse from 100 to 130, the respiration from 24 to 40, the white blood cell count from 19,000 to 33,600, and the red blood cell count from 3,080,000 to 2,470,000; the blood culture was positive for *Blastomyces*, January 28. Necropsy was performed eight hours post mortem.

An anatomic diagnosis was made of generalized blastomycosis involving both lungs, the thyroid, and the bones, joints and skin; acute pleuritis (right), and emaciation. Gross observations showed that the left lung was firmly bound down to the chest wall. The right pleura was greatly thickened and was covered with a greenish, soft, friable, shaggy material which gave rise to a few firm adhesions. On palpation the lungs were firm, and on section the right upper lobe showed caseous, lobar consolidation. On the remaining lobes of the lungs were bronchopneumonic patches with numerous small cavities scattered throughout both lungs.

The left lobe of the thyroid was completely replaced by an abscess cavity opening at the left sternoclavicular joint by means of a ragged sinus. The middle lobe of the thyroid contained several small, white, firm nodules.

Section from the lungs showed a variety of lesions. In places the alveolar spaces were filled with fibrin or desquamated epithelial cells. In other sections there was an exudate consisting of fibrin, mononuclear leukocytes and lymphocytes, and finally there were areas of necrosis surrounded by a zone of mononuclear cells and giant cells, the latter containing *Blastomyces*. The cellular exudate at times was walled off and organized or had undergone necrosis. This was the typical allergic, cellular response of the body to the presence of this organism.

In the less involved portions of the lung, the earliest response of the body was manifested by the appearance of mononuclear leukocytes, immediately surrounding the organism. But in contrast with the suggestions of tuberculosis this was followed by a marked infiltration of polymorphoneutrophilic leukocytes which soon underwent necrosis. This was now walled off by a zone of mononuclear cells, and an occasional lymphocyte. Giant cells appeared at the periphery of the necrotic mass, phagocytizing *Blastomyces* and débris.

This was the typical blastomycetic mononuclear tubercle reaction. The organisms in the center of the necrotic mass were of a shell type and only the outline of the organisms could be made out. The organisms were most numerous at the periphery of the necrotic mass. They varied in their staining capacity, in the thickness of the capsular membrane and in the degree of vacuolization present. At times, numerous organisms were seen without any cellular infiltration about them.

In places the central giant cells had a mantle of mononuclear leukocyte or lymphocytes about them. Sections of the thyroid showed abscess wall, marked accumulation of colloid periasci-

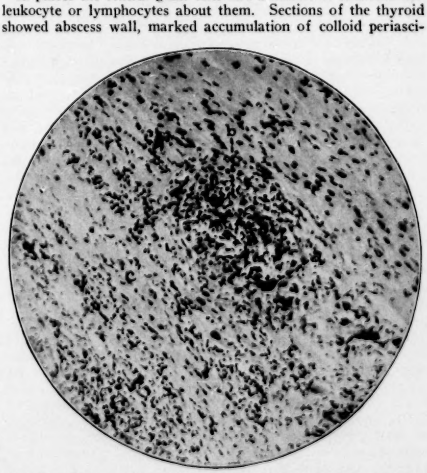


Fig. 2.—Section of heart muscle showing the formation of the blastomycotic tubercle by the infiltration of (*a*) polymorphonuclears and a few lymphocytes, which replace the mononuclear wandering cells; (*b*) a giant cell at the periphery; slightly reduced from a photomicrograph with a magnification of 170 diameters.

nous lymphoid infiltration and scattered localized areas of necrosis containing giant cells of the Langhans type.

The observations in this case are of interest because involvement of the thyroid has not yet been reported and because of its typical illustration of the allergic and tubercle reaction of the tissues in cases of systemic blastomycosis.

BACTERIOLOGY

Blastomyces is widely distributed in nature. Stober [4] succeeded in finding and isolating the organism from decaying wood in the dwelling of a patient suffering from blastomycosis. Coupal [5] insists that cultural results

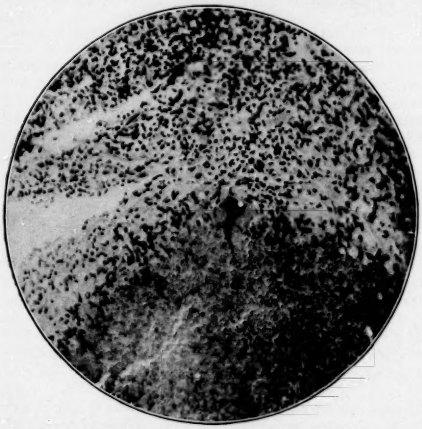


Fig. 3.—Section of heart muscle showing the final stage in the development of the blastomycotic tubercle: (*a*) central necrosis surrounded by (*c*) layer of mononuclear wandering cells; (*b*) giant cell at the periphery of the necrotic area; (*d*) cellular infiltration and young fibroblasts forming the outermost zone; slightly reduced from a photomicrograph with a magnification of 160 diameters.

be confirmed by microscopic studies before a diagnosis of blastomycosis is made, since he found the organism present in wounds as a secondary invader.

The organism is not delicate in its nutritive requirements and Stober [4] has cultivated it even on sterile, moist filter paper. The organism grows both at room and at incubator temperatures, but the optimal temperature is still an open question. Wade and Bel [6] found that their strains of *Blastomyces* attained maximum development at room temperature, while McLane [7] concluded that growth occurred equally well at room or incubator temperatures. Hamburger's [8] experiments showed that at room temperature the aerial growth predominates, while at incubator temperature the colonies lose their aerial hyphae and become oidial or smooth in appearance.

In this study the effect of varying temperature on the growth and life cycle of *Blastomyces* was determined by inoculating series of similar mediums with various strains and incubating at different temperatures. The results can be briefly summarized as follows: Organisms recently isolated from human lesions give a maximum growth at room temperature with an aerial type predominating, provided suitable mediums are used. At incubator temperature these strains grow almost equally well but assume the oidial form, thus confirming Hamburger's observations. If cultures of these strains are subsequently grown at room temperature over a period of at least one year (as they were in this series, in order to simulate the saprophytic existence of the organism in nature) and are then incubated, unique results are obtained. Small numbers of organisms from oidial or aerial colonies inoculated on various mediums and grown at incubator temperature give rise to a poor growth. The yeastlike colonies under similar conditions grow well. When a larger number of organisms are used for the inoculum, good growth is obtained even with the oidial or the aerial colonies.

At a temperature of 41 C., three of the six yeastlike strains were able to develop in their usual form. Only one of the eight oidial and aerial strains grew at this temperature. The oidial growth was greatly inhibited in size but formed short aerial hyphae in a few mediums. At a temperature of 45 F., the oidial and aerial strains develop if the inoculum is large; the resulting colonies are usually oidial in nature.

Recently isolated strains of the oidial and aerial forms are labile in their cultural appearances but become stabilized after prolonged cultivation on the same mediums and under constant temperature conditions. Occasionally permanent, but usually temporary changes occur in the cultural characteristics of a given strain without preceding variation in temperature, moisture or mediums.

In one of the systemic cases of blastomycosis a coccoid-like growth, clumped in zoogleal masses, was isolated on mediums of the following composition: maltose, 2 per cent; glycerin, 2 per cent; dextrose, 2 per cent; peptone, 1 per cent, and gentian violet, 1:100,000. Since the size of the colony was much larger than that of the cocci on this medium, it was

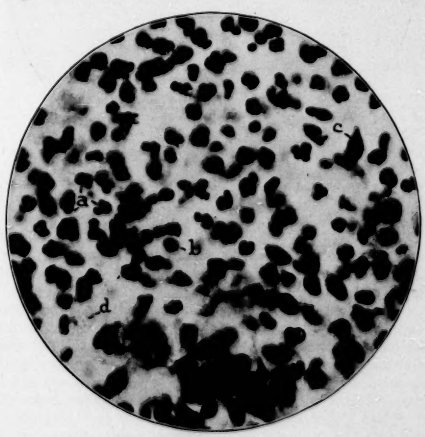


Fig. 4.—Section of lung showing exudative type of inflammation: (*a*) polymorphoneutrophilic leukocyte; (*b*) lymphocyte; (*c*) mononuclear wandering cell; (*d*) blastomyces; slightly reduced from a photomicrograph with a magnification of 800 diameters.

retained for further study and after four transplants it became a typical aerial colony.

Sabouraud's medium is the one most commonly used for the isolation of this and related organisms. A medium that has been found to give excellent results in the isolation of the organism from human lesions

4. Stober, A. M.: Systemic Blastomycosis: A Report of Its Pathological, Bacteriological and Clinical Features, Arch. Int. Med. **13**: 509 (April) 1914.

5. Coupal, J. F.: Report of Six Cases of Blastomycosis, Internat. Clinics **4**: 1 (Dec.) 1924.

6. Wade, H. W., and Bel, G. S.: A Critical Consideration of Systemic Blastomycosis, with Notes on Certain Special Features and Report of Five Cases, Arch. Int. Med. **18**: 103 (July) 1916.

7. McLane, C. C.: Case of a Generalized Fatal Blastomycosis, Including One in a Dog, J. Infect. Dis. **18**: 194 (Aug.) 1916.

8. Hamburger, W. W.: A Comparative Study of Four Strains of Organisms Isolated from Four Cases of Generalized Blastomycosis, J. Infect. Dis. **4**: 201, 1907.

consists of peptone, 1 per cent; dextrose, 2 per cent; maltose, 2 per cent; glycerin, 2 per cent, and bile, 0.5 per cent. For subsequent culture the bile may be omitted.

The organism will develop on ordinary agar-agar, even without the presence of any nutritive material, as very small, pinpoint, grayish, flat colonies at times with short radiating hyphae arising about the colonies, or more cottony, fluffy mycelia at the top of the slant. This may be due to the utilization of the small amount of inorganic material present in the agar, or of the reserve energy stored up in the individual cells, thus enabling the organisms to reproduce for one generation.

Following a thorough review of the literature and personal observation on cultures of *Blastomyces*, Ricketts [2] subdivided this group of organisms into three distinct types; namely, (1) yeastlike, (2) oidial, and (3) hypomycetoid. Stober,[4] Montgomery and Ormsby,[9] and Hamburger,[8] however, contend that these three forms are only stages in the biologic development

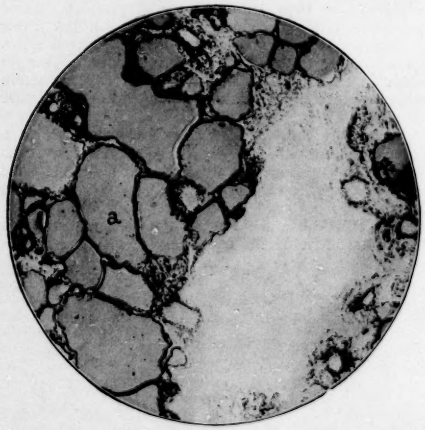


Fig. 5.—Section of thyroid showing (*a*) colloid goiter, and necrosis surrounded by giant cells, mononuclear wandering cells, lymphocytes and polymorphoneutrophilic leukocytes; slightly reduced from a photomicrograph with a magnification of 85 diameters.

of the same organism. Ormsby adds, however, that in some cases of blastomycosis only the yeast type can be demonstrated.

An attempt was made in this study to determine (*a*) whether more than one of the three types could be isolated from a case of blastomycosis, and (*b*) the conditions which govern the morphologic and cultural appearance of this organism, and to obtain a comparative cultural and biologic study of strains so isolated.

After a thorough sterilization of the overlying skin, the infected material was aspirated from subcutaneous abscesses in the systemic cases, and from peripheral submiliary abscesses in the local skin cases. It was then inoculated on large stool plates and test tubes containing various percentages and combinations of dextrose, maltose, glycerin, peptone, bile and gentian violet. The test tube cultures usually yielded only one type of growth, undoubtedly because of the overgrowth of the predominant type or differences in the rate of growth. Stool plates (with the exception of two cases) consistently showed both the oidial and the aerial forms, the respective number of each varying with (1) the age of the culture, (2) the strain and (3) the mediums employed.

Typical yeastlike colonies were occasionally encountered which closely resembled, both culturally and morphologically, the saprophytic yeast so commonly obtained from throats and air passages. In the two cases of systemic blastomycosis, only the yeast form was obtained on culture, even after numerous attempts. In one of these cases, cultures taken from infected material at autopsy also yielded only this type of growth.

The most interesting strain belonging to this yeast type gave an aerial type of growth when first isolated from a blastomycotic subcutaneous abscess but, contrary to the usual cultural development, on subculture it first assumed a pomegranate-like appearance, and later an oidial and finally a pure yeastlike growth, which it has retained. It has never formed hyphae but has shown a well developed, doubly contoured capsule and spherical outline, even when grown on blood serum. The yeastlike strains mentioned, however, produce hyphae which penetrate deeply into the substratum when grown on favorable mediums. The yeastlike type derived from blastomycotic lesions and those from saprophytic sources, when stained with Heidenhain's or Nicholle's stain, gave the same microscopic picture. All of the blastomycotic yeasts and some of the saprophytic yeasts failed to develop endospores when transferred to gypsum blocks, thus suggesting that lack of endospore formation on gypsum blocks is not a criterion for a blastomycotic yeast.

After experimentation with numerous fixatives and stains, it was found that smears of the blastomycotic yeastlike growths, when fixed with a 1:10,000 solution of potassium permanganate and then stained with Loeffler's alkaline methylene blue (methylthionine chloride, U. S. P.) showed a broad bluish or black capsule surrounding each cell, with a peripheral linear network at the external margins of the capsule containing reddish staining dots, which were most marked at the junction of the network formed by two adjacent cells. In the saprophytic group of yeasts, under ordinary cultural conditions, the capsule was always less well developed and usually absent. In the yeasts, Hansen [10] first attracted attention to this phenomenon—namely, a secretion of mucilaginous substance which collects the cells into a sort of network quite similar to zooglea. It appears to play a part in the coagulation of yeasts followed by a clarification of the liquid, and is comparable to the agglutination that is found among bacteria.

Preliminary cultural experimentation demonstrated that while *Blastomyces* is very resistant to external influences, certain chemicals and dyes exert a deleterious influence on the development of the organism. By adding these reagents in varying proportions to the mediums, a wide range in cultural conditions was easily reproduced.

This cultural method of study also offered the best means for studying (1) the fungicidal properties of gentian violet and potassium iodide, which are used in the treatment of this disease; (2) the significance of the three forms of growth as related to the life cycle

9. Montgomery, F. H., and Ormsby, O. S.: Systemic Blastomycosis: Its Etiologic, Pathologic and Clinical Features as Established by a Clinical Survey and Summary of Twenty-Two Cases, Arch. Int. Med. 2:1 (Aug.) 1908.

10. Hansen, quoted by Guilliermond, A., and Tanner, F. W.: The Yeasts, New York, John Wiley and Sons, 1920, p. 46.

of the organism and conditions favoring their appearance or development, and (3) the biologic properties of this organism.

Fourteen strains were used in this series of experiments, eight of the oidial and aerial type, and six of the smooth yeast type. Approximately the same number of organisms of each strain were inoculated on various types of mediums and grown at different temperatures.

MEDIUMS USED

Carbohydrates.—The usual monosaccharides, disaccharides, polysaccharides and all of the rare sugars were used to determine the sugar reaction in this group of organisms. The amount and degree of growth obtained in the yeastlike strains was directly proportional to the presence or absence of available carbohydrates. The oidial strains and especially the aerial strains showed well developed colonies on peptone-agar mediums and did not manifest beneficial results when carbohydrates were added. All strains of the yeastlike types produced acid or acid and gas in dextrose or maltose or in both. Only one of the oidial and aerial group caused fermentation in these sugars. The amount of gas produced by strains of *Blastomyces* is always very slight. The observations are too varied to permit even an attempt at classification by this means. Thus, one strain produced acid only in lactose, while another produced acid in arabinose.

The fermentation reactions of *Blastomyces* are not constant. A marked decrease has been noted in three of these strains and McLane [7] found a complete loss of fermentability in one of the strains.

Milk.—In seven of the eight oidial and aerial strains, this medium produced acid with subsequent digestion of the casein. Smooth strains produced acid but never digestion of the casein.

Lead Acetate Agar.—Five of the six smooth yeastlike forms produced a brick red metallic discoloration in this medium. In the oidial and aerial types two strains caused a slight reddening at the bottom of the growth, and in another a black discoloration was produced at the same site.

Bile.—The aerial form has often undergone a retrograde change to the oidial and even to the yeast type, and the oidial type has changed to the aerial form and the yeast form in bile mediums. In the yeast type, on the other hand, marked changes in the cultural characteristics have been observed only twice, once in the coccoid-like growth mentioned before and, on another occasion, in strain 23, which assumed the aerial type for only one generation.

Bile in a 2 to 5 per cent concentration inhibits the size and number of the colonies. Its deleterious influence is much less marked on this organism than on gram-positive cocci, and in low dilutions it can be used to advantage in the isolation of *Blastomyces* from pus, secondarily invaded from such bacteria. At room temperature and in concentrations of 2 to 5 per cent it always produces an oidial type of growth. In higher concentrations of from 6 to 8 per cent either complete inhibition or yeastlike growth results, varying with the different strains and temperature. This inhibitorial effect can be greatly overcome by the addition of the available carbohydrates.

TREATMENT OF BLASTOMYCOSES

Potassium Iodide.—This drug is universally used in the treatment of blastomycotic infections. In concentrations of from 1 to 8 per cent with 1 per cent peptone, it was found that potassium iodide exerts an inhibitory influence, even in the 1 per cent concentrations, the colonies being fewer and smaller. At room temperature and in 8 per cent concentration, the majority of strains failed to grow. Here again the growth was of a less aerial type, depending on the concentration and the dye. Growth at incubator temperature always resulted in a less aerial type than at room temperature. The greater the concentration, the more yeastlike the growth. The addition of suitable carbohydrates decreased but never completely overcame the inhibitory influence of this drug.

Gentian Violet.—Churchman [11] found that animals inoculated with organisms previously stained with gentian violet survived, while all the animals that received unstained organisms died of the disease. Sanderson and Smith conclude that extremely dilute solutions of gentian violet possess a marked inhibitory effect on its growth and suggest that it may be utilized in the treatment of the disease. With these strains it was found that autoclaving greatly reduces the fungicidal action of this dye. The inhibitory effect is always greater at incubator than at room temperatures. The dye causes a diminution in the size and number of colonies, but the tendency to produce smooth colonies is less marked than with bile. The addition of carbohydrates decreases the inhibitory influence and encourages the oidial type of growth.

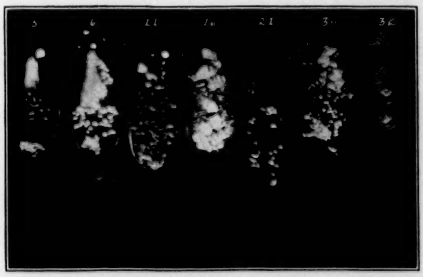


Fig. 6.—Strain 673: incubator temperature; tube 5: 4 per cent peptone agar, poor growth, essentially an oidial type of growth; tube 6: 1 per cent dextrose, 1 per cent peptone agar, growth good, essentially oidial, few aerial colonies at the very top of the slant; tube 11: 2 per cent maltose, 1 per cent peptone agar, good oidial growth; tube 16: 4 per cent saccharose, 1 per cent peptone agar, oidial growth with secondary aerial colonies at the bottom; tube 21: 5 per cent bile, 1 per cent peptone agar; diminution in size and number of colonies but still the disk type of growth; tube 30: 1 per cent potassium iodide, 1 per cent peptone agar, oidial colonies with a fine fuzz; tube 32: 8 per cent potassium iodide, 1 per cent peptone agar, very smooth, yeast type of growth, complete transition to the smooth type of growth.

Acriflavine.—The results with acriflavine are the same as those obtained with gentian violet but the inhibitory effect of this dye is even greater.

Thymol.—Myers' [12] experiments prove that thymol possesses marked fungicidal powers and that therapeutic trial of this drug seems warranted. This drug exhibited the greatest fungicidal power of all the chemical reagents used in this series. Growth was never obtained in 1 per cent concentration. Therapeutically it should yield good results with the local type of disease.

11. Churchman, J. W.: Further Studies on the Behavior of Bacteria Toward Gentian Violet, J. Exper. Med. **33:** 569, 1921.
12. Myers, H. B.: An Unappreciated Fungicidal Action of Certain Volatile Oils, J. A. M. A. **89:** 1834 (Nov. 26) 1927.

ENDOSPORULATION

LeCount and Myers [13] and Wade and Bel [6] have observed small forms of the organism in sections of blastomycotic lesions which they regard as endospores. An old culture of a black pigment producing strain was found by Mellon to reproduce by endosporulation.

An extensive study of infected tissues showed only one organism containing bodies suggestive of endosporulation. This was found in a section taken from the lung which contained four large, round bodies, completely filling the cell with a definite separate wall and central nuclear material staining with hematoxylin. On four occasions, once in a culture grown on gentian violet and in three others, old 8 per cent bile cultures, there were found from two to four round bodies, completely filling the cells, which were acid fast and resistant to the usual stains for fat, but germination into the vegetative forms was never observed.

The appearance of fat globules is a usual occurrence in old cultures or in cultures obtained in an unfavorable environment. In certain cultures of the smooth type, durable cells or dauerzellen were observed. Endosporulation must be regarded as a rare and consequently an unimportant method of reproduction both in tissues and in cultures of *Blastomyces*.

PIGMENT PRODUCTION

Two strains produced an endogenous black pigment. One, obtained from an uncontaminated, unbroken abscess, first grew into the typical yeastlike form but later developed hyphae and pigment. The other strain was derived from a skin case of blastomycosis which has about healed. Previous cultures from the same source had failed to show any pigmentation. The pigment is produced only when available carbohydrates are present in the mediums. Both of the strains are unusually resistant to noxious agents.

One strain has produced a purplish exogenous pigment under unfavorable influences, the growth proper having a reddish appearance.

CONCLUSION

1. The reaction of the tissues in systemic blastomycosis is an allergic one.

2. Unfavorable environmental conditions produced by drugs, dyes, bile and incubator temperature cause the organism to revert to the oidial or yeast stage, depending on the concentration of the deleterious agent and varying with the individual strain.

3. The yeastlike growth is the resistant form of the organism; the aerial growth is the saprophytic form.

4. Endosporulation, while it occurs both in the body and in culture, is of a minor importance in the life cycle of *Blastomyces*.

5. An endogenous black pigment is formed on suitable carbohydrates and in one strain an exogenous pigment has been observed.

ABSTRACT OF DISCUSSION

DR. HAMILTON MONTGOMERY, Rochester, Minn.: I wish to emphasize the necessity of a careful differential diagnosis between blastomycosis, coccidioidal granuloma and torula, not only from the pathologic and bacteriologic standpoint but also from the clinical aspects. Blastomycosis can be divided into two types. The cutaneous, which is the common form, may resemble tuberculosis verrucosa cutis both clinically and microscopically, so that demonstration of the budding organism is necessary for positive diagnosis. The systemic form may arise from the cutaneous type but usually starts as multiple subcutaneous abscesses, and later on involves the epidermis. Microscopically these abscesses could readily be mistaken for coccogenic abscesses if a careful search is not made for the organism. In tissues and in fresh potassium hydroxide preparations, the organism of blastomycosis always reproduces by budding; *Coccidioides immitis*, the cause of coccidioidal granuloma, always by endospore formation. Torula is usually associated with lesions in the brain and spinal cord, and is a double contoured yeastlike organism which may reproduce by budding. In one case of systemic blastomycosis that I studied recently, budding organisms were found in the brain at postmortem. However, the organisms of torula have a zooglea-like membrane which serves to distinguish them even histologically from blastomycetes. Whereas the three diseases mentioned may be closely related, I believe it is important that they be kept separate in the terminology, and that we should distinguish between them. Cutaneous blastomycosis is usually readily cured by iodides in combination with the x-rays, whereas systemic blastomycosis is almost always fatal. Torula and coccidioidal granuloma are also persistent and often fatal.

DR. I. D. MICHELSON, Memphis, Tenn.: In a small number of cases of blastomycosis, the resulting growth, even from the lesions at autopsy, is very similar to that of the ordinary yeast. It is still questionable whether blastomycosis is produced by a yeast with saprophytic cultural characteristics, as evidenced by the oidial and aerial stages of development, or whether in addition there are certain strains which have temporarily or permanently lost this ability.

13. Le Count, E. R., and Myers, J.: Systemic Blastomycosis: Final Report of the Case Reported by Eisendrath and Ormsby, J. Infect. Dis. **4**: 187, 1907.

INTRADERMAL VACCINATIONS WITH B C G VIRUS

PRELIMINARY NOTE *

ARVID WALLGREN, M.D.
Head Physician, Children's Hospital
GOTHENBURG, SWEDEN

The antituberculosis vaccine of Calmette, known as B C G, consists of a strain of bovine tubercle bacilli, originally virulent, which, through long cultivation on bile-containing mediums, has lost its pathogenicity for animals and man. According to the original statement of Calmette,[1] advocated for a long time, this organism should be absolutely avirulent, and should lack the power to produce any specific tissue changes. Injected into, or ingested by, laboratory animals, the B C G should be absorbed and carried to the regional lymphatic glands, where it should enter into a sort of symbiosis with the cells, and call forth no demonstrable tissue reaction.

Control experiments, first reported by Kraus [2] of Vienna, have shown, however, that the statement concerning the avirulence of the B C G was not quite true, being subject to some modification. A typical, but benign, spontaneously healing, tuberculosis does result from its inoculation into some guinea-pigs. In Gothenburg, at the same time, Dr. Wassén made similar observations. Later the virulence of the vaccine was tested in several countries. As a result of these experiments, the original statement of Calmette has now been modified: for animals, the B C G is not completely avirulent but is of a very low virulence.

Experimental investigations on laboratory animals and practical determinations on cattle have given evi-

* From the Medical Department of the Children's Hospital.

1. Calmette, A.: La vaccination préventive contre la tuberculose, Paris, 1927. Calmette, A.; Guerin, C., and Weill-Hallé, B.: Bull. Acad. de méd. **91**: 787 (June 24) 1924; ibid. **93**: 681 (June 16) 1925. Heimbeck: Ann. de l'Inst. Pasteur. **42**: 170 (Feb.) 1928.

2. Kraus, R.: Wien. klin. Wchnschr. **40**: 49 (Jan. 13) 1927.

dence of an immunizing effect of the vaccine. An infection with virulent tubercle bacilli of an animal so immunized remains localized and usually lacks the tendency to generalization seen in control animals. The vaccination is made by injection, and the animals immunized in this manner react positively to tuberculin.

In the mass vaccination of new-born children carried on in France and other countries, the B C G is given by mouth, and these infants rarely become tuberculin positive. Nevertheless, Calmette insists that in all the children treated in this manner the vaccination has been successful, producing immunity one month after the ingestion of the B C G. About 100,000 infants have now been vaccinated. In giant statistics concerning the ultimate fate of these children compared with the mortality rate of nonvaccinated children in tuberculous families, an attempt has been made to prove the immunizing effect of B C G ingestion. It is claimed that the mortality rate from tuberculosis has diminished from 25 per cent in nonvaccinated children to 1 per cent in those that have been premunized (immunized) in the manner described.

However, these statistics and conclusions, as well as the method of vaccination, have met with criticism; at first only from the former neutral and German speaking countries (Medin,[3] Wallgren,[4] Löwenstein,[5] Nobel[6]), but finally, also from Calmette's own countrymen (Nobécourt,[7] Roux,[8] Lignières[9]). This is not the place to discuss the different phases of this criticism. Those interested in the subject are referred to a paper that I[4] read at a meeting of the Medical Society of Gothenburg, Feb. 10, 1927. I shall only state that I agree with those who believe that very little has as yet been proved of the immunizing effect of peroral B C G vaccination.

I have mentioned that the perorally vaccinated children only exceptionally react positively to tuberculin. As a clinician, I can scarcely comprehend how a specific immunity can be said to have been obtained by infection with living tubercle bacilli, unless a positive tuberculin reaction shows that the vaccination was really successful. In 1925, Weill-Hallé and Turpin[10] reported that some children vaccinated subcutaneously developed tuberculin sensitiveness. If this should be a constant fact, and if the children do not suffer injury through a vaccination performed in this manner, this method, for the reasons already stated, is to be preferred. In the article that I have previously referred to, I suggested intradermal inoculation as a method of vaccination more rational from the clinical point of view than the peroral.

When, about a year and a half ago, I began experimenting with B C G, it was not directly with the intention of investigating its immunizing properties, but rather with the object of studying the immediate effects of the vaccination on the child, as well as the other questions associated with this subject. Very little was then known about the clinical course of the vaccination, and, indeed, this is so even today. The children had only rarely been clinically observed for a sufficiently long period. I believe that I have the right to try the vaccine on children, as Calmette and his co-workers in various countries had stated that the B C G was absolutely harmless. My own experiences confirm this. I have used practically only the intradermal method as the one best suited for the observation of the local reaction. This article is to be considered as a preliminary report of my experiences.

In France, new-born children have been vaccinated whether they were exposed to tuberculous infection in their homes or not. I have deviated from this procedure and have inoculated only those children whose parents or other relatives in their environment were tuberculous. I have done this, not because I think vaccination dangerous, but because there are some inconveniences associated with this method to which there is no reason to subject children who run no risk in their homes.

Before inoculation, one must be convinced that the child is free from infection with virulent tubercle bacilli. There is no purpose in vaccinating a child already infected. It can do no good, and may possibly be harmful. In addition, a previous infection renders it impossible to determine the immunizing effect of a vaccination. New-born children, however, can be vaccinated immediately after birth before any contamination has taken place.

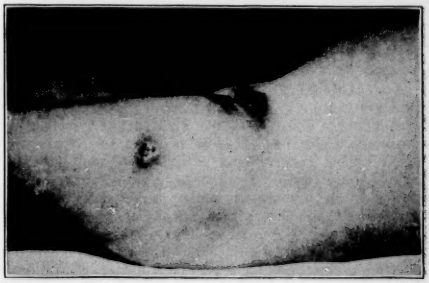


Fig. 1.—Vaccination in a child after two and one-half months.

If there has been the slightest chance of infection, the child, before vaccination, should be subjected to repeated tuberculin tests. Even if it reacts negatively on admission, it should not be considered free from tuberculous infection. It may have been infected just before admission, and then the allergy is not demonstrable until after six to seven weeks. I have therefore placed these children in quarantine in my hospital or in a babies' home free from any risk of tuberculous infection. If, after the lapse of this time, the child is still tuberculin negative, I consider it fit to be vaccinated.

In testing the tuberculin sensitiveness of children, I use intracutaneous injections of from 0.1 to 3 mg. of O. T. I interpret a reaction as positive if there is a distinct nodule and area of redness of at least 1 cm. in diameter on the third day after injection. At this time, from six to seven weeks after infection or inoculation, the Pirquet test is not yet positive. Some children who were under observation a sufficiently long time did not give a positive Pirquet reaction until weeks or months after they had already shown a positive intracutaneous reaction. Only the Pirquet test appears to be used in France, and this, according to my experience, is very unsatisfactory in determining tuberculin

3. Medin, O.: Hygiea **87**: 245 (April 15) 1925.
4. Wallgren, Arvid: Acta Pædiat. **5**, 1928.
5. Löwenstein, E.: Wien. klin. Wchnschr. **39**: 293 (March 11) 1926.
6. Nobel: Tr. Thirty-Eighth German Pediatric Congress, Budapest, 1927, p. 120.
7. Nobécourt, P.: Bull. Soc. de pédiat. de Paris **26**: 145 (March) 1928.
8. Roux, J.: Bull. Soc. de pédiat. de Paris **26**: 137 (March) 1928.
9. Lignières: Bull. Acad. de méd., May 1 and May 8, 1928.
10. Weill-Hallé, B., and Turpin, R.: Paris méd. **1**: 20 (Jan. 3) 1925; Bull. Acad. de méd. **97**: 25 (Jan.) 1927; Arch. de méd. d. enf. **31**: 517, 1928.

sensitiveness in infants. This is true in those who have been infected with virulent bacilli, and even more so in those that have been inoculated with B C G. I may here state that, according to my experience, one cannot at all rely on the cutaneous test in determining the tuberculin sensitiveness after vaccination with B C G. One should always make an intracutaneous or subcutaneous test with a sufficiently large dose, and I have found in these cases that 1 mg. is a satisfactory dosage.

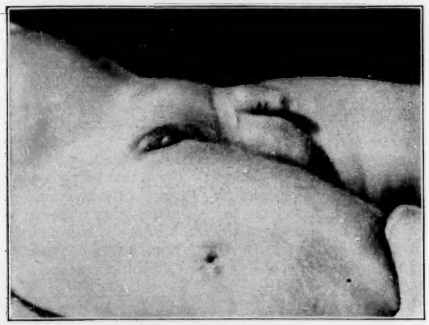


Fig. 2.—Vaccination after eight weeks.

A child that has been observed for a sufficient long time and has not reacted to tuberculin is now ready for inoculation. The B C G we owe to the courtesy of Professor Calmette. It was brought to Sweden by Dr. Wassén, bacteriologist at the Municipal Bacteriologic Laboratory of Gothenburg, who has been my co-worker in my experiments, and who has himself prepared the vaccines. The inoculation has been made in one sitting in the outer surface of the thigh.

After the inoculation, one can feel at the site of injection a small nodule, which persists for several days and then disappears. A few weeks afterward, a new infiltration appears. This increases in size, suppurates, and perforates the cutis, and the resulting fistula heals spontaneously. In two cases only the healing has been hastened by curetting the lesion; in all the others, the suppuration has ceased, and the fistula has healed in from one and one-half to three months. The great tendency to spontaneous healing, an absolute condition for using the vaccine in children, is thus very evident.

Thus far I am in full agreement with Calmette. His statement that the vaccine, if inoculated, gives rise only to an insignificant, local cold abscess is, however, not always true. In five cases I have seen an enlargement of the regional lymph glands, followed by caseous degeneration, suppuration, and fistula formation. In the pus, which was not pathogenic for guinea-pigs, B C G was demonstrated. It is obvious that the B C G spread by way of the lymphatics from the primary focus to the regional lymph glands in such a quantity that the reaction in the gland led to a partial destruction of its tissue. This fact does not agree with the predominant French opinion that the B C G lies in the lymphatic glands only as a saprophyte, arousing no anatomic changes. Figures 1 and 2 prove my assertion.

It is obvious, therefore, that not only for animals but also for man B C G is more virulent than was originally considered in France. This, however, does not diminish its usefulness as an immunizing agent. On the contrary, if the organism were completely avirulent, if in inoculating the bacilli no reaction occurred in the organism, one could hardly comprehend the mechanism of immunization. But the virulence must not be so great that the children are subjected to any risk. Whether these regional lymphomas which developed in my patients constituted a risk I cannot say with certainty, but I do not believe so. At all events, the children suffered a certain injury, which should be prevented. Apparently the caseous changes and the suppuration of the glands did not exert any harmful influence of the development of these children or on their general state of health. The fistulas that formed were curetted and healed in a few months, leaving a fibrous scar. I cannot therefore consider that these children were greatly harmed by the inoculation.

But, certainly, one should produce in these infants as little local injury as possible, and especially should one avoid regional lymphomas with caseation and suppuration. Obviously, therefore, the doses I had used in these cases were too large, although they were the same as those used by the French (from 0.25 to 1 mg.). The dose must be large enough to produce tuberculin allergy without causing suppurating lymphomas. The varying effects of the different doses are shown in table 1.

These figures show that 0.01 mg. is certainly satisfactory as regards the absence of lymph gland suppuration, but quite insufficient to produce allergy, as only two of the eleven children became tuberculin positive. A higher dose, therefore, had to be chosen. With 0.25 mg. or more, almost every child developed suppuration of the regional glands. This dosage was certainly unsatisfactory. On the other hand, with a dose of 0.1 mg. only one of 27 inoculated children developed regional gland suppuration, and 25 reacted positively to tuberculin. According to my present experience, I consider 0.1 mg. the optimal dose for intracutaneous inoculation in infants.

It is possible that the same dose may call forth stronger or milder reactions, if vaccines prepared in other places are used. In France, as in Norway, from 0.01 to 0.05 mg. is being injected subcutaneously, and this is sufficient in these countries to produce tuberculin sensitiveness. As there may not be any great difference as regards the resistance to B C G between the subcutaneous and the intracutaneous injections, I consider it prudent, when beginning with inoculations, to try a smaller dose in the first cases and, if this is unsatisfactory, to increase it to 0.1 mg. or more.

TABLE 1.—*Effects of Varying Doses*

Quantity of B C G Injected Mg.	Primary Focus			Regional Lymphatic Glands			
	None	Nodule	Abscess	No Enlargement	In the Size of Pea or More	Abscess	Allergy
1	..	2	2	..	2	1	2
1.5	..	3	3	..	3	3	3
0.25	..	1	1	..	1	1	1
0.1	1	23	15	15	12	1	25
0.01	9	2	2	9	2	..	2
0.01–1	10	34	23	24	20	6	33

From experimental work carried out by several authors with fully virulent bacilli on animals, we know that the more massive the infection, the more quickly does tuberculin allergy occur. I have had similar experiences as to the onset of allergy after intradermal injections of different doses of B C G. With quantities

of from 0.5 to 1 mg., the tuberculin sensitiveness occurred after about two weeks; with 0.1 mg., it occurred only after about six weeks. Table 2 represents the relationship between the dosage of B C G and the incubation period in weeks, in those cases in which allergy developed at all. The interval between inoculation and demonstrable allergy varied from one and one-half weeks in a child who received 0.5 mg. of B C G to sixteen weeks in a child in whom 0.1 mg. was inoculated. After sixteen weeks I have not as yet seen any infant become sensitive, but I cannot of course deny that the preallergic period may be even longer.

As I have stated, I have not used the Pirquet test in examining the vaccinated children for tuberculin sensitiveness, but have injected the tuberculin intracutaneously, using 1 mg. This was repeated every week after inoculation, until the reaction became positive.

The majority of children who became tuberculin positive showed suppuration of the primary focus. I have never seen tuberculin allergy develop in those cases that did not show any demonstrable reaction, but in not a few cases there was only small nodule formation without suppuration. The regional lymph glands were enlarged in several of the tuberculin positive children, but not in all. All of the children who showed definite lymph gland enlargement reacted to tuberculin. To judge from these experiences, a demonstrable primary focus is an absolute prerequisite to the development of allergy, but a definite swelling or suppuration of the regional glands need not necessarily occur.

How long this tuberculin allergy lasts I cannot as yet tell. One child who was reexamined one year after the onset of allergy, and who had not been in contact with virulent bacilli, still reacted to 1 mg. of tuberculin. Probably the allergy can last several years in some cases and only a short time in others. Nothing definite can as yet be said.

A child that becomes tuberculin sensitive after inoculation with B C G I consider vaccinated. The tuberculin sensitiveness is the only evidence that the vaccination has really taken. If the inoculation confers immunity at all, this manifests itself as the ability to react positively to tuberculin. Before this we can tell nothing about the general reaction of the organism to the inoculated virus. I cannot deny the possibility of immunity earlier; for instance, when suppuration begins and the child does not yet react to tuberculin. It is safer, however, to consider a child successfully vaccinated only after the onset of allergy.

Up to the present time, I have seen thirty-three children who were tuberculin sensitive after inoculation during their stay in the hospital. These children have almost all, after a shorter or longer interval, left the hospital and have since been living in their contaminated homes. Before discharging a child, I have always warned the parents not to expose it unnecessarily. I have told them that the child probably has a greater resistance after vaccination than before, but that it can still receive a dangerous infection from the consumptive parent.

From what has been mentioned, it follows that unless the child reacts to tuberculin I do not consider it successfully vaccinated. Until this time, I try to keep the child free from exposure, and have succeeded, with only few exceptions, in preventing the parents from taking the child home, if the source of infection is still there. Beforehand one can never tell how long the child will have to remain in the hospital. As allergy ordinarily occurs after from six to seven weeks, this period may be considered the usual length of the necessary quarantine.

In France, a different procedure is followed. At first the new-born children were given the B C G to ingest while living and remaining in the contaminated home. Later, Calmette advised that the child be protected from a virulent infection until the B C G assimilation and immunization had taken place. According to Calmette, this always takes one month. This interval appears to have been haphazardly chosen, as I do not know of any clinical experiences which would enable us to state that the onset of immunity in peroral vaccination occurs after one month. Clinically, we can judge that an intra-abdominal tuberculous infection in a child has taken place only by means of tuberculin tests. I consider it a good principle to protect the child from virulent infection until allergy has occurred, rather than to fix a certain interval arbitrarily.

Weill-Hallé and Turpin have investigated the tuberculin sensitiveness of perorally vaccinated children who have not been exposed to virulent infection. They have found that only eleven of 244 children examined (4.5 per cent) were allergic three months after ingestion, and that it takes twelve months before 14.2 per cent react to tuberculin. To judge from these observations, considerably more than one month should elapse before we have any evidence that the peroral vaccination has succeeded. When we make an intradermal inoculation the allergy can be demonstrated, at times, after a few weeks. In general, however, the children do not react before from five to seven weeks have elapsed (four-fifths of my cases) and then one month is too short a period of protection. It appears that the longer one can prevent a virulent infection, the better it is for the child. Obviously, therefore, a quarantine period of only one month for perorally vaccinated children is too short.

TABLE 2.—*Relation Between Dosage and Incubation Period*

Quantity of B C G Injected	Incubation Period in Weeks															
Mg.	1-2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	In All
1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2
0.5	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	3
0.25	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
0.1	..	..	3	1	5	8	4	..	..	1	..	1	1	..	..	1	25
0.01	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2
0.01-1	1	1	6	4	5	8	4	..	..	1	..	1	1	..	..	1	33

When one of the vaccinated children has left the hospital and is living in its contaminated home, I reexamine it fluoroscopically every six months in order to detect any enlargement of the bronchial glands. As yet the result has been negative; all these children are in excellent health. In these cases the tuberculin test has, of course, lost its diagnostic value, as the children have become tuberculin sensitive through the vaccination.

From table 2 it follows that the children usually are allergic within seven weeks after inoculation. This, however, is not always the case. Some children do not react by this time. In some of them one cannot detect any reaction at all at the site of inoculation; others show only an insignificant nodule which remains unchanged for several months. As I cannot consider these children successfully vaccinated, I have, following the principle already mentioned, reinoculated them after from six to eight weeks. It is possible that the very insignificant primary focus observed in some children may later enlarge and even suppurate, and that these

children may eventually become tuberculin sensitive from the primary inoculation. It is, however, difficult to persuade the parents to have their children hospitalized for an uncertain length of time. I have therefore preferred to shorten the period of observation by reinoculation. As this has not harmed the children at all, I consider it as rational a procedure as reinoculation in smallpox vaccination, when the first vaccination has not taken.

I have had to revaccinate not a few patients in order to arouse tuberculin allergy. Of thirty-five intradermally vaccinated children that have been observed for a sufficiently long time, eight have had to be reinoculated. One of these received three different injections at ten and seven week intervals, and another, four injections, at intervals of seven, seven and fourteen weeks, before allergy occurred. Three other reinoculated children were sent to a babies' home before their tuberculin sensitiveness could be demonstrated long enough.

The dose for reinoculation was either the same as the previous one (0.1 mg.) or higher if the first had been only 0.01 mg. In the reinoculated patients the same changes and course were manifest as in those who became allergic after the first inoculation. None of them developed suppuration of the regional glands. The onset of allergy was within five weeks in one case, six weeks in three cases, and seven weeks in one case. The incubation period has thus been the same as in the children that have required only one inoculation. I am inclined to interpret this as an evidence that the children were not yet immune through the preceding inoculation at the time when they were reinoculated. This experience could also support the theory that only the children that show tuberculin sensitiveness after vaccination are really immune.

It is of interest to observe the changes which the insignificant nodule resulting from the first inoculation undergoes under the influence of a reinoculation. I always make the reinoculation in the side opposite to the one at which the first injection took place. When suppuration begins at the site of reinoculation, indicating the onset of allergy in the near future, the original, indolent, primary nodule quite suddenly begins to enlarge and at times to suppurate. This is probably a response to the allergy produced by the reinoculation.

I now come to a fact of very great importance, which has escaped the attention of French authors; viz., the different ways in which children react to the same dose of B C G. Naturally, an individual difference in the resistance to the B C G virus could not be suspected as long as there was no opportunity to observe the course of the vaccination. In the peroral method, any local changes that may develop do so in the abdomen, where they are invisible and impossible to control. Add to this the fact that Calmette urges against the testing of vaccinated children with tuberculin, and one can realize how little is really known about the effect of peroral vaccination in any individual child.

By intradermal inoculation, on the contrary, one always has the opportunity to observe the course of the resulting focus. This should be an essential requirement in these vaccinations.

From observation of the course of the primary focus after inoculation, and from studying the tuberculin sensitiveness, I have come to the conclusion that there exists a great individual variation in susceptibility in infants to the B C G virus. Tables 1 and 2 show how different the results have been when the same dose of B C G was used. Not all of these differences, however, are due to variations in resistance as the same preparation of vaccine was not always used. But even if one injects the same dosage of the same vaccine on the same day, one obtains different results. The following exampies illustrate these differences:

On the same day five children, A, B, C, D and E, aged, respectively, 2½, 5½, 5½, 12 and 12 months, received the same dose of the same preparation of vaccine, 0.1 mg. intradermally. In the first four only a pinhead sized nodule developed after from six to fourteen weeks, and they did not become allergic. E, on the contrary, who was of the same age as D, showed a pea-sized nodule after a few weeks and allergy after six.

Two children, F and G, 11 and 12 months of age, received, with only a one day interval, 0.1 mg. of vaccine. F became allergic and developed a pea-sized infiltration, and a swelling of the regional glands could be demonstrated four weeks after inoculation; while G did not react to tuberculin nine weeks after vaccination and did not show a local nodule.

Several critics of the antituberculosis vaccination of Calmette have suggested the possibility that the virus regains its virulence through repeated passage through animals, or as a result of some unexpected accident. The experiments that have been carried out to investigate this question have, however, as yet failed to bring any evidence to support this supposition.

There has been less reason to think of the possibility of an accidental diminution of the virulence of the vaccine, as, naturally, the immediate effects of peroral vaccination cannot be judged. In intradermal vaccination there is a good opportunity to study this problem, and I have made some observations that should help in this solution.

In table 1 one can see how variable has been the effect of the inoculation with the same dose of B C G. As I have just tried to explain, these variations can, to a certain extent, depend on different individual susceptibility to the virus. But there must be another cause, as otherwise we could hardly explain the great variations in the inoculation effect of different preparations. When the same dose in all or nearly all inoculated children gives almost no infiltration and no allergy on one occasion, while, on another, it results in local abscess formation and tuberculin sensitiveness, there is reason to suspect not only an individual but also a virulence variability. I shall cite a few examples.

The five children referred to, A, B, C, D and E, each received on the same day in March, 1928, 0.1 mg. of the same vaccine preparation, intradermally. The first four showed only minimal evidence of having been injected, and did not become allergic. Only the fifth developed an infiltration and was allergic after six weeks. Three other children received the same dose, in the same month, but of another preparation, and all were allergic after about six weeks. In June, 1928, three other children received the same dose of a third preparation; in all the vaccination took.

Three new-born children, during their first week of life, each received 0.01 mg. of three different preparations of B C G. They were all in good condition. One was vaccinated in September, 1927, one in December, 1927, and the third in January, 1928. No reaction at all was to be seen in the latter two. The first, however, developed an infiltration at least hazel-nut in size; this suppurated, the regional glands were greatly enlarged (hazel-nut in size) and the child was tuberculin sensitive after four weeks.

Generally we found that the preparations that were made during the end of 1927 and the beginning of 1928 were much less virulent than had been the case previously, and we did not obtain nearly such marked local effects with the same dose that was used earlier. The cultures grew differently; they were drier in appearance and were not so easily emulsified. Later in the spring of 1928 they began to regain their former appearance and virulence. I therefore think it probable that the B C G can vary in virulence to a certain degree.

When such variations in the effect of inoculation can occur, although the injected dose is always the same, one can easily perceive how great the variations may be in peroral vaccinations. There is always an uncertainty as to the amount of vaccine actually absorbed. At times a large quantity may perhaps be absorbed, and then the immunizing effect would be great, and would come on rather early; at others, all of the vaccine may leave the organism in the natural manner, with the excreta, and then there would not be any effect.

I have done some comparative experiments on the vaccination of new-born children, partly with peroral administration, using the French doses of, in all, 30 mg. and partly with the intradermal inoculation of 0.1 mg. The same preparation of vaccine was used in the two forms of administration. Two children received doses of the same preparation, March 31; one, a new-born child, was given 30 mg. perorally; the other, 0.1 mg., intradermally. The latter developed local infiltration and suppuration, and allergy after six weeks. The former, on the other hand, did not show any evidence of having been vaccinated, and has not reacted as yet to the Mantoux test with 3 mg. of tuberculin (four and one-half months after the B C G ingestion).

A new-born child received 30 mg. of B C G perorally, June 14, and on the same day another child, aged 8½ months, was inoculated intradermally with 0.1 mg. of the same preparation. While this child showed an infiltration at least hazel-nut in size, and was tuberculin sensitive after six weeks, the first has not as yet, ten weeks after vaccination, reacted to tuberculin.

Two new-born twins received doses of the same preparation on the same day; one, 30 mg. perorally; the other, 0.1 mg. intradermally. The latter developed a peanut-sized infiltration, and was allergic after five and one-half weeks. The former did not show any evidence at all of having been vaccinated; after ten weeks, it was tuberculin negative.

These observations I consider rather good illustrations of the difference that exists between the two methods of vaccination. I think that in the future we should vaccinate by injection, so that the children may become allergic in a quicker and more certain way, and so that we may observe if and when the vaccination has taken, and in this way obtain evidence if and when the child is immunized. There should be no difference in the conception of a smallpox and an antituberculosis vaccination; in both one has to observe the treated cutaneous area, and possibly repeat the inoculation. If children were given smallpox virus to ingest, we could never tell whether they were really vaccinated or not.

There is, however, an obstacle which makes it more difficult to realize this mode of antituberculosis vaccination than smallpox vaccination; namely, the much longer incubation period in the former. Generally, one has to wait at least six or seven weeks before one can judge whether the inoculation has taken or not, and, if reinoculated, the child has to be protected from virulent infection at least six or seven weeks longer. This is the real crux of the situation, and I therefore think that this method can never be generally used. It is perhaps more easily utilized in an urban district with a good organization of the tuberculosis campaign than in a rural one, where it should be harder to quarantine children after, and possibly also before, vaccination. Certainly it will be a long time before one can amass such vast statistics in intradermally vaccinated children as those of Calmette in perorally vaccinated children.

But, of course, all that can be done to protect and in a rational manner to immunize the babies in tuberculous families should be done. We know that if we can separate the noninfected infant from its consumptive parent, we can protect it from tuberculosis. Can we make this claim for antituberculosis vaccination? I myself am convinced that we can give the child an increased resistance by an inoculation of living bacilli that call forth allergy. I base my opinion on the experimental work in animals that has been carried out all over the world. My own experience as to the effect of B C G vaccination in infants, as I have performed it, is as yet too incomplete to allow of any definite conclusions. I can only say that up to the present time no vaccinated child has developed any tuberculous disease, after having been exposed in its home. I shall return to this question another time, when the number of my vaccinated patients has increased. In this article my intention was simply to describe my method of vaccination, and to report some of the observations that I have made during my work.

EXPERIMENTAL AND CLINICAL STUDIES IN CARDIAC HYPERTROPHY *

J. A. E. EYSTER, M.D.
MADISON, WIS.

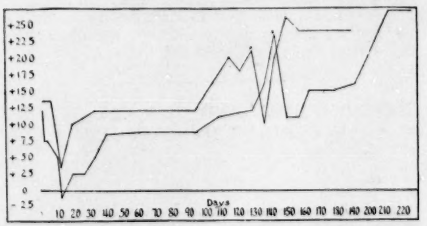
That the diseased heart is usually larger than the normal organ was noted more than 300 years ago. Subsequent observation showed that the increase in muscle mass occurred mainly in that part of the heart placed under a mechanical handicap as a result of the lesion, and, with the obvious analogy of skeletal muscle hypertrophy as a result of increased activity, the hypertrophy of heart muscle was ascribed to the increased work necessary to overcome the mechanical defect. The theory of work hypertrophy has had almost universal acceptance. Stewart,[1] in a study of the relative weights of the different chambers of the heart associated with experimental aortic regurgitation in dogs, found that while the left ventricle hypertrophied more than other chambers, the right ventricle and auricles showed some increase in muscle mass. This he ascribed, however, to increased work of these chambers, probably the result of an intracardiac reflex, which coordinates the activity of all chambers. The primary effect in this instance is on the left ventricle, since it is this chamber which has to move the greater load as a result of the lesion; but other chambers are also stimulated to increased activity and hence show some hypertrophy. Hovarth [2] referred to the stretching of the muscle as a stimulus to the increased work and hence to the hypertrophy, and drew an analogy between

* From the University of Wisconsin Medical School.
* Read before the Section on Pathology and Physiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Stewart, H. A.: J. Exper. Med. **13**: 187, 1911.
2. Hovarth: Ueber die Hypertrophie des Herzens, Vienna, 1897.

the heart muscle under increased loads and the relation already established between initial load and initial stretching and work in skeletal muscle (Fick). The relation between initial load, represented by the venous pressure, initial length of the ventricular muscle (diastolic volume), and volume output of blood, was subsequently put forward by Patterson and Starling [3] as the "law of the heart." This relation has been studied from various aspects by a number of workers.[4] Holman and Beck,[5] in a study of the hypertrophy produced by experimental puncture of the interventricular septum, concluded that hypertrophy results from an increased flow of blood through a chamber and is referable to the increased work necessary to propel the increased amount of blood. The only definite dissenter from the almost universally accepted theory of work hypertrophy appears to be Albrecht,[6] who believed that in human hearts, the seat of myocardial disease (associated with chronic nephritis), the stimulus to hypertrophy may be impaired nutrition ("pathologic nutritive stimulus").

That dilatation of the heart muscle precedes hypertrophy in cardiac lesions has been rather widely accepted on theoretical grounds, but it was first actually demonstrated by the experimental work of Eyster, Meek and Hodges [7] and Eyster.[8] In several types of experimental



Massive transfusions in dogs: area of frontal plane teleroentgenogram; *x*, *x* mark second transfusion.

lesions produced in dogs, it was shown by roentgenologic methods that a period of increase in heart volume occurred immediately after the lesion was produced, associated with macroscopic and microscopic evidence of stretching and injury to the muscle. This initial increase in volume disappeared after a few days and the heart returned to its normal volume or even below. In lesions affecting the left ventricles (aortic regurgitation or aortic constriction) the stretching is evident, especially at the apex, where a marked thinning occurs in the region shown by MacCallum to be the weakest structurally. Subsequent to this transitory period of stretching or dilatation, a second and more gradually developing increase in heart volume occurs which is due to increase in muscle mass or hypertrophy. This is completed as the result of a single lesion in approximately 100 days. A second lesion, superimposed on the first, causes a second period of transitory dilatation and a subsequent period of additional hypertrophy.

Further studies on the relationship between the period of initial dilatation and the evident injury to the muscle fibers resulting from this and the final hypertrophy have led to the proposal of a new theory as to the cause of heart muscle hypertrophy. This theory, in contrast with the theory of work hypertrophy, may be designated as the theory of injury hypertrophy, and it ascribes the increase in muscle mass not to a physiologic response to increased work but to a tissue response of some nature to actual injury. During the period of stretching, the muscle fibers are the seat of a process of hydropic degeneration, a typical injury and reaction to injury.[9] It was subsequently shown that if this period of initial dilatation was brought about and then the condition producing the overload was removed, cardiac hypertrophy developed. This experimental procedure consisted in placing a constricting band around the ascending aorta, allowing it to remain for a period of from three to six days, and then removing it. Roentgenologic observations showed that the usual period of dilatation disappeared when the band was removed. The hearts in these animals subsequently hypertrophied after a period of time and to an extent comparable with that in a similar series in which the aortic bands were allowed to remain. Hypertrophy was determined by roentgenologic observations and by terminal heart weights. It would thus appear that prolonged overload or prolonged increased work is not the essential factor in the development of cardiac hypertrophy. The essential factor appears to be the stretching and injury to the heart muscle, which may be produced by a temporary overload lasting only a relatively short time.

In order to test this matter further, temporary cardiac overload has been produced in a series of dogs by massive transfusions. The estimated blood volume was increased from 75 to 100 per cent in a series of eleven animals. These have shown an initial dilatation comparable in every way to that produced by aortic lesions, except that it lasts for a somewhat shorter period. During this period the ventricular muscle shows similar macroscopic and microscopic evidences of stretching and injury. The heart volume then returns to near its normal or even below, as also occurs after aortic lesions, and finally shows a second more gradually developing increase in volume due to hypertrophy of the muscle. A second massive transfusion leads to a repetition of the whole process, a second period of dilatation being succeeded by a second period of additional hypertrophy, comparable again to the production of a second experimental lesion superimposed on the first.

In the chart the areas of the frontal plane cardiac teleroentgenograms from two dogs of this series are shown. The ordinates represent time in days, the abscissas the extent of enlargement expressed in percentage deviation from the normal established before transfusion and represented by the zero line. One animal showed an initial dilatation in which the area of the silhouette was increased 13.5 per cent, lasting until the fifth day. On the twelfth day the area was +3.5 per cent, increasing to +18 per cent on the one hundred and twenty-second day. A second transfusion on the one hundred and twenty-eighth day increased the area to +22 per cent, with a subsequent decrease to +10 per cent seven days later, and a final hypertrophy represented by an increase of 25.5 per cent in area on the one hundred and sixty-eighth day. The data from the other animal are quite similar except that the heart volume

3. Patterson, S. W., and Starling, E. H.: J. Physiol. **48**: 357, 1914.
4. The matter is discussed by Eyster, J. A. E.: Venous Pressure and Its Clinical Applications, Physiol. Rev. **6**: 281 (April) 1926.
5. Holman, E., and Beck, C. S.: J. Exper. Med. **42**: 661 (Nov.) 1925.
6. Albrecht, E.: Der Herzmuskel und seine Bedeutung für Physiologie, Pathologie und Klinik des Herzens, Berlin, 1903.
7. Eyster, J. A. E.; Meek, W. J., and Hodges, F. J.: Cardiac Changes Subsequent to Experimental Aortic Lesions, Arch. Int. Med. **39**: 536 (April) 1927.
8. Eyster, J. A. E.: Tr. A. Am. Physicians **42**: 15, 1927.

9. I am indebted to Dr. C. H. Bunting of the Department of Pathology of the University of Wisconsin Medical School for the interpretations of the tissue changes and for invaluable assistance and suggestions.

was actually reduced, following the period of initial dilatation, slightly below the normal, and that the final period of hypertrophy was slightly greater (increase in area of 27 per cent).

A period of transitory overload with stretching of the muscle beyond its physiologic limits and associated with injury to the muscle is thus sufficient to cause hypertrophy, and a prolonged period of increased work is not necessary. Whether prolonged increased work alone, without a period of abnormal overload and injury, can result in hypertrophy, is perhaps still an open question, but such hypertrophy, if it occurs at all, is probably far less in degree than that associated with organic lesions or disease. Studies of the effects of increased muscular activity on heart size, both in laboratory animals and in man, have led to quite contradictory results (Kulbs,[10] Bruns,[11] Hatai,[12] Schieffer,[13] Lee [14]). Daily work on the treadmill in dogs has failed in my hands to show any evidence of cardiac hypertrophy, either by frequent teleroentgenographic observations or by terminal heart weights. White rats, on the other hand, running voluntarily in revolving cages have shown evidence of slight increase in heart weight as compared with controls kept in stationary cages. Recent improvement in the estimation of heart size in man by the use of the x-rays and certain other methods of physical examination (P. C. Hodges and Eyster,[15] F. J. Hodges and Eyster,[16] Eyster [17]) have made it possible to separate the hypertrophic heart from the normal heart, with a high degree of accuracy. Application of these methods to a group of university athletes selected on the basis of having engaged in athletics throughout their high school course and during one or more years of university residence does not show evidence of increased heart size as compared with groups of other normal subjects not engaged in athletics and without any important athletic history. The former group at the present time comprises seventy men and forty women, and orthodiagraphic mensuration, based on predicted measurements determined by statistical analysis of normal subjects, other roentgenographic observations, localization of the cardiac apex by orthodiagraphic methods, and other efforts directed toward an estimation of heart size do not show any evidence of cardiac hypertrophy. If the increased heart work associated with increased work of the skeletal muscles leads to hypertrophy, it is small in extent and too small to be determined by our present methods in man—methods, however, which are quite capable of demonstrating the cardiac hypertrophy associated with organic heart or vascular disease. Extensive experience in the application of these methods in man has convinced me that cardiac hypertrophy in man, of an extent determinable by these methods, or of an extent encountered in organic heart or vascular disease, does not occur in individuals in the absence of cardiovascular disease. Certain other clinical observations appear to be of significance in this connection. Cases of overactive hearts, presumably simple rate stimulation, and represented by two groups, one of effort syndrome or neurocirculatory asthenia and the other of mild and moderate hyperthyroidism, do not show any evidence of clinical hypertrophy. Prolonged arterial hypertension, in which the heart work is increased, probably to a greater extent than in the usual valve lesion, may fail to cause cardiac hypertrophy, probably because the overwork develops gradually, and at no time is the heart confronted with an overload of rather sudden origin which causes it to dilate to the point of muscle injury. The causes leading to gradually increasing hypertension may presumably develop so gradually that at no time is the physiologic limit of response of the heart muscle to the increased work exceeded, and at no time therefore does abnormal stretching of the muscle occur. In other cases, with a more rapidly developing hypertension and overload, this limit may be exceeded, stretching and injury to the muscle occur and subsequent hypertrophy develop.

Experimental and clinical observations have thus led to the conclusion that the most important factor leading to the cardiac hypertrophy that develops in organic cardiac or vascular disease is not increased work of the muscle per se but the muscle injury and the reaction to injury that result from abnormal stretching of the muscle in the initial period of overload as the lesion develops.

1 South Pinckney Street.

10. Kulbs, F.: Kongress für innere Medizin **23**: 430, 1906.
11. Bruns, O.: München. med. Wchnschr. **56**: 1003, 1909.
12. Hatai, S.: Anat. Rec. **9**: 647, 1915.
13. Schieffer: Deutsches Arch. f. klin. Med. **89**: 604, 1907.
14. Lee, R. I.: Am. Phys. Educ. Rev. **22**: 166, 1917.
15. Hodges, P. C., and Eyster, J. A. E.: Am. J. Roentgenol. **12**: 252 (Sept.) 1924.
16. Hodges, F. J., and Eyster, J. A. E.: Estimation of Transverse Cardiac Diameter in Man, Arch. Int. Med. **37**: 707 (May) 1926.
17. Eyster, J. A. E.: Determination of Cardiac Hypertrophy by Roentgen-Ray Methods, Arch. Int. Med. **41**: 667 (May) 1928; Tr. A. Am. Phys., to be published.

ABSTRACT OF DISCUSSION

DR. F. W. HARTMAN, Detroit: Last year we presented some work before this society in which we gave data to show that hypertrophy of the heart followed the production of nephritis as evidenced by changes in the teleroentgenogram, the electrocardiogram and the weight at postmortem. Some of these animals had hearts about twice the normal size predicted for animals of corresponding weight; that is, we obtained a heart weight-body weight ratio up to 0.11 from the normal of approximately 0.007. This hypertrophy did not seem to us to correspond with the hypertension which was produced in the majority of animals; in other words, the amount of cardiac hypertrophy was in no way comparable or consistent with the hypertension. In fact, hypertrophy seemed to take place about the same time that the hypertension became definite, and at autopsy the hypertrophy was greater than we would expect from the amount of hypertension produced. I am wondering whether Dr. Eyster can give us any data that would allow this hypertrophy to fit in with his theory of injury. It seems to me that these animals developed the hypertension gradually and the hypertrophy about the same time, so that it is a little hard to make the phenomena fit in with the author's theory. Of course, another theory is that there is some toxic substance circulating in the blood of these nephritic animals and in men with nephritis that may produce hypertrophy of the heart. I have no data on that, but we do know that in this type of nephritis there is a marked retention of nitrogenous products.

DR. MOSES BARRON, Minneapolis: This paper may help explain some of the cases of cardiac hypertrophy, the pathogenesis of which is not clear, even at autopsy. Not infrequently we encounter large hearts at autopsy which show no evidences of chronic valvular disease or of high blood pressure, and in which there has not been any history of hypertension which could explain the cardiac hypertrophy. In the department of pathology at the University of Minnesota, it is generally felt that the presence of an enlarged heart that cannot be explained in any other way is the result of an essential hypertension, especially if there is coronary disease present. I believe that cardiac hypertrophy of quite a marked degree may occur, especially if there is coronary sclerosis, without any preexisting hypertension. The paper would help explain the pathogenesis of such cases. If, as Dr. Eyster has stated, the injury to muscle fibers is in itself a stimulus to cardiac hypertrophy, then the macroscopic or microscopic injury of muscles through coronary disease would bring about such an enlargement. I have always felt that coronary disease may be the direct cause of the cardiac enlargement. However, I do not believe that I can entirely agree with the author that it is only muscle

injury which will produce hypertrophy. It seems to me that overload from work will produce it, just as in hypertension when the overwork develops gradually without producing acute dilatation. I should like to ask the author whether blood pressure readings were taken of these animals when he gave them large transfusions. Was there developed an increase in the blood pressure or was there only an increase in the volume by which one would explain the stretching of the heart and finally the production of the increased size of the heart muscle?

DR. JOHN A. E. EYSTER, Madison, Wis.: I have attempted to emphasize only one factor in the production of cardiac hypertrophy, an injury factor which is believed to be associated with the stretching of the muscle which occurs when a mechanical overload develops as a result of the occurrence of a valve lesion or from a developing arterial hypertension, and to minimize the factor of increased work per se as a factor in this connection. There are obviously other things that may cause injury to the heart muscle and it is entirely possible that they may also produce hypertrophy. Considerable experimental work has been done in an effort to produce cardiac hypertrophy by epinephrine and sparteine, with the idea of causing an arterial hypertension by the use of these substances. It was found that, while it is impossible to produce sustained hypertension by means of these substances, hypertrophy does occur and is associated with myocardial changes due to toxic action on the heart muscle. It is perfectly possible, and I think probable, that various other factors which cause injury to the heart muscle may result in hypertrophy. The results from the experimental and clinical observations that I have reported merely show that increased work of the muscle itself is not the most important factor concerned, and that one of the factors and probably the principal factor underlying clinical hypertrophy in organic heart disease is a muscle injury due to mechanical overload and stretching of the muscle.

COD LIVER OIL AS A SUBSTITUTE FOR CREAM IN FEEDING MIXTURES FOR INFANTS *

H. E. IRISH, M.D.
CHICAGO

Abundant evidence now exists showing that assayed cod liver oil has definite potency in preventing rickets and xerophthalmia and in promoting growth through its vitamins A and D. It will probably remain the cheapest and most convenient agent for this purpose. Its food value in presenting digestible fat has been demonstrated [1] in animals.

Certain disadvantages in its use prevent optimum results. Its odor causes antipathy among adult attendants, which breeds excuses for not giving it. Its viscidity when given cold causes gagging, choking and vomiting, part of which is due to clumsiness in giving fluids with a spoon to an infant. Together with these factors, too small doses are usually ordered, so that it is rare to find a bottle-fed infant at 1 year without a rachitic rosary and broadened epiphyses. Adequacy of dosage varies with the potency of the oil, size of the child, season of the year, amount of sunshine and skyshine received, altitude, and proximity to the patient of irradiated human bodies. From 15 drops [2] to several teaspoonfuls [3] daily are recommended as adequate dosage.

TABLE 1.—*Sample Formula*

Name..... Date..... Age, 3 months.	Weight, 10 pounds.
Milk skimmed, boiled 1 minute and cooled (1½ oz. to pound)..	15 oz.
Cod liver oil 3 per cent of the quantity of milk.....	0.45-0.50 oz.
Cane sugar (add 1/10 oz. per pound of body weight).....	1 oz.
Oatmeal water (9 oz.).....	q. s. ad 25 oz.

A pint of 3 per cent milk contains 1 tablespoonful of fat, so that if that quantity of cod liver oil is given, the fat intake is doubled. Fat is the food element most often difficult for infants to digest, protein being the least difficult, with sugar standing midway. Evidences of fat overfeeding are vomiting, constipation with soap stools, and arrested gain in weight.

TABLE 2.—*Increase in Weight of Children Fed With Cod Liver Oil*

Case	Age	Gain in Ounces	Average Gain at This Age, Ounces	Excess Over Average, Ounces
1. B. N.	4 wks.	130 in 14 wks.	90	40
2. K. R.	7 wks.	48 in 6 wks.	30	18
3. M. R.	5 wks.	60 in 10 wks.	50	10
4. C. B.	3 mos.	78 in 13 wks.	65	13
5. R. S.	7 mos.	93 in 15 wks.	60	33
6. W. N.	8 mos.	48 in 11 wks.	44	6
7. M. S.	13 mos.	19 in 4 wks.	8	11
8. A. B.	13 mos.	14 in 2 wks.	8	6
9. M. C.	16 mos.	22 in 10 wks.	20	12
10. J. W.	18 mos.	36 in 6 wks.	12	2

Disregarding minimum efficient doses, I fed the entire fat requirement in assayed cod liver oil, after removing the cream from the milk with a self starting, sterilizable siphon. I wrote a twenty-four hour formula, following Budin's approximate method and using skimmed milk, 1½ ounces to the pound of body weight, 1/10 ounce of sugar to the pound of body weight, cod liver oil, 3 per cent of the total quantity of skimmed milk, with enough oatmeal water to make up the total twenty-four hour quantity found by multiplying the amount of each feeding (2 ounces more than the month age up to 6 months) by the number of feedings in twenty-four hours. All final fractions were advanced to the next highest whole number.

This formula is fed in 5 ounce quantities (2 ounces more than the age in months up to 6 months) five times in twenty-four hours.

It should be mixed while cool, shaken thoroughly and divided in feeding bottles. It is kept cool until feeding time, shaken well and warmed to body temperature. The oil tends to separate but remains sufficiently well mixed so that all is taken.

After 6 months the usual vegetable and cereal feeding was given, and orange juice was fed daily.

The cod liver oil formula was well taken by all the children under 10 months. Thereafter, some showed initial aversion, so that smaller doses, increased as tolerated, were used. Clinically the results were good; the pink skin, the rapid gain in weight without increase of the sugar fraction, and the absence of vomiting denoted successful feeding.

Constipation tended to occur when the fat content was raised to 5 per cent, but was overcome by adding 1 tablespoon of extract of malt, U. S. P., to the mixture.

No advance in the signs of osseous rickets was noted, those previously unaffected remaining so. The nervous symptoms in case 10 disappeared. The feeding was done in the dark months of January, February and March, in the presence of an epidemic of upper respira-

* From the Department of Pediatrics, University of Illinois.

1. Nelson, Jones, Adams and Andreagg: Indust. & Engin. Chem. 9, July, 1927.

2. Gerstenberger, H. J., and Nourse, J. D.: The Prevention of Rickets in Premature Infants, J. A. M. A. 87: 1108-1114 (Oct. 2) 1926.

3. Iless, A. F., quoted by Sollmann, Torald: A Manual of Pharmacology, ed. 3, Philadelphia, W. B. Saunders Company, 1926, p. 116.

tory infection. The mixture was well tolerated during febrile attacks and gains were nearly constant. The infections that occurred were relatively mild.

TABLE 3.—*Results of Cod Liver Oil Treatment*

Infections		Constipation	Diagnosis
0		0	Prematurity feeder
0		0	Feeder
2	Medium upper respiratory infections	+	Feeder underweight
1	Medium upper respiratory infection and bilateral otitis media	0	Feeder
1	Head cold	+	Pyloric stenosis
3	Severe upper respiratory infections	+	Syphilis
1		+	Rickets; underweight
0		0	Rickets
0		0	Syphilis; pertussis
0		0	Anorexia; insomnia

Aside from the marked advantage in growth stimulation, the method obviates spoon difficulties and the viscidity after warming the mixture. Further, it insures regular maximum dosage.

432 South Lincoln Street.

THE VALUE OF ACTIVE IMMUNIZATION AGAINST SCARLET FEVER *

GUY L. KIEFER, M.D., D.P.H.
Commissioner, Michigan Department of Health
LANSING, MICH.

General familiarity with the work of Drs. George and Gladys Dick [1] on the prophylaxis of scarlet fever precludes the necessity of discussing in this paper the background of the skin test for susceptibility to scarlet fever and the active immunization by means of scarlet fever streptococcus toxin.

Shortly after the announcement of the Dicks that individual susceptibility to scarlet fever could be determined by injecting a small amount of scarlet fever streptococcus toxin intracutaneously, the Michigan Department of Health undertook to apply in the state institutions the methods advocated. Three institutions were selected for study and the work has been going on since the fall of 1924. Prior to January, 1925, the technic of the staff of workers of the Michigan Department of Health was perfected under the supervision of the Dicks. The same persons have carried on the institutional work, in general, since that time.

The Michigan Home and Training School is an institution for feebleminded and defective children; the Michigan Reformatory is a penal institution for younger men, and the Vocational Training School for Boys is the state school for delinquent boys. The population of the reformatory and the vocational school fluctuates greatly. The Michigan Home and Training School has a rather constant population as there are very few releases. These three institutions have been the laboratory in which we have worked on the administration of the Dick test and active immunization. The high points of our studies are presented at this time and indicate that at the end of three years we have at least fixed the problems that are yet to be solved before scarlet fever active immunization can be circumscribed by standard rules of procedure.

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 18, 1928.

1. Dick, G. F., and Dick, Gladys H.: A Skin Test for Susceptibility to Scarlet Fever, J. A. M. A. **82**: 265 (Jan. 26) 1924.

Early in 1925, 2,124 children in the Michigan Home and Training School were tested for susceptibility to scarlet fever; 37.6 per cent, or 799, were found to be positive. At that time little work had been done on the dosage of scarlet fever streptococcus toxin. This group was given 500 skin test doses for the first dose, from 1,000 to 1,500 for the second, and from 3,000 to 4,500 for the third. Twenty-one days after the third treatment, tests made on the 799 treated patients showed 61 per cent of them still positive. These patients were given 5,000 skin test doses as a fourth dose. Fourteen days later they were tested again and 11 per cent were found to be positive. These ninety-four children were treated and tested until all but nine, who were lost track of, were made to react negatively by March, 1925. In May, 1928, 577 of the original 799 children that had been treated until the reaction was negative were retested and it was found that 131 had become positive in the three years, or 29.3 per cent had changed from negative back to positive. Another small group of ninety with positive reactions were treated in 1926 with three doses of 500, 3,500, 30,000 skin test doses two weeks apart, and all became negative. Forty-one of these still available for study were retested in May, 1928, and fourteen, or 34 per cent, had again become positive.

After March, 1925, more immunization was not done for a while, allowing control susceptibles to accumulate by admission into the institution in an attempt to test the efficacy of active immunization to prevent scarlet fever. For several years prior to the immunization as outlined, the institution had scarlet fever almost constantly. After the immunization in January and February, 1925, there was no scarlet fever in the institution until October of the same year. After that, however, there were eleven cases of scarlet fever, all traceable to a case that developed in the receiving ward. Only one of the patients, T. D., had been treated with toxin until she had a negative reaction to the Dick test. The others were susceptible persons (Dick positives) that had not been given active immunization but had been admitted after immunization had been discontinued. T. D. had a negative Dick test, March 8, 1925, and was diagnosed as having scarlet fever, October 16, six months after a negative Dick test had been demonstrated. The superintendent of the institution and physicians who have been in residence for twenty years state that unquestionably, in their opinion, the institution has been protected against scarlet fever by this method. Immunization was resumed in January, 1927, and there has been no scarlet fever since.

The boys' vocational school at Lansing has been used as a control institution. During the past two years 1,176 boys have been tested on admission and the result of the Dick test made a part of their record. Immunization has not been done in this institution. There has been no scarlet fever case in the institution, but it must be remembered that all newcomers are detained in the receiving ward in a separate building for a period of thirty days. There have been two scarlet fever cases in this admission ward, but none in the school proper. The only information available is the age grouping of those with positive reactions.

At the Michigan Reformatory, Ionia, scarlet fever had been prevalent for four years. It would be stamped out for a few weeks by quarantine, and as soon as the quarantine was lifted it would appear again. In December, 1925, Dr. Whitman, the resident physician at that institution, stopped scarlet fever by immu-

nizing all inmates, without respect to the Dick test, with 500, 1,500 and 7,500 skin test doses of toxin given at weekly intervals. Jan. 1, 1926, the health department took over the work at Ionia to determine the proper dosage and time interval between doses, and to get any other information of the administration of scarlet fever streptococcus toxin. The age group was 18 years and older, and the dosage of 500, 5,000, 30,000 skin test doses, which was given at intervals of two weeks between injections, gave 100 per cent change from Dick positive to Dick negative in some groups, while in other groups there was an occasional doubtful or weakly positive reaction. From March, 1926, until January, 1927, Dick tests were made on every one admitted, and the susceptible were given 500, 5,000 and 30,000 skin test doses. There has been no scarlet fever in the institution since 1925. Beginning Jan. 12, 1927, all newly admitted persons were retested as in the year previous, but only half of those who were susceptible were immunized until June, 1927. Since that time none who are susceptible have been immunized. They have been used to obtain another control group. However, no case of scarlet fever has developed in this control group because there has been no exposure.

Age Grouping of Patients with Positive Reactions

Age Group	Number Tested	Positives	
		Number	Per Cent
12 to 17	504	155	30.75
18 to 24	393	82	20.86
25 to 30	107	16	14.95
31 to 35	49	9	18.36
36 to 45	83	14	16.86
Over 45	40	6	15.00

A retest was made in May, 1928, of the persons treated between March, 1926, and January, 1927. Only 114 of these men were still available for study. All had been treated with the same amount of toxin, but the time since treatment varied from one to two years. Forty-four, or 39 per cent, were found to have changed from negative to positive. This high percentage of returns in so short a time is probably due to the ages of the groups.

As a control of the change from Dick negative to Dick positive, 233 untreated inmates of the Michigan Home and Training School that had shown at least one negative Dick test in 1925 were tested in May, 1928. Seventy-nine, or 34 per cent, had changed from negative to positive.

It is quite within the realm of possibility that these results are only approximately correct, because of the variability of Dick toxin and the difficulty of keeping constant the standard skin test dose. This difficulty will be discussed a little later.

In January, 1927, announcement was made to the physicians of Michigan that the state department of health would distribute scarlet fever streptococcus toxin under restrictions to the physicians to use in their private practice. On receipt of requests from physicians, scarlet fever streptococcus toxin for performing Dick tests on the number of children specified was forwarded with instructions for performing the test. When the department received notification of the number of Dick positive children that were to be immunized, the first dose of toxin was forwarded for treating those with positive reactions. Two weeks later a second dose was shipped, two weeks later the third dose was shipped and two weeks later, Dick material for retesting was shipped. The physician or health officer was then to make a report to the department which would include a description of reactions as well as the number of failures to immunize as indicated by the second Dick test.

Since January, 1927, 8,000 first doses, 6,900 second doses and 6,900 third doses have been used by 238 practicing physicians in 125 towns. The reports of the physicians on retests indicate that from 93 to 98 per cent changed from Dick positive to Dick negative. Many physicians have not completed their reports. The department of health physicians have supervised the giving of toxin to school children in Holland, Zeeland, Walled Lake, West Branch, Beulah, Benzonia, Harbor Springs, Niles and Coldwater. A total of 6,000, more or less, school children have been treated with a dosage of 500, 3,000 and 20,000 skin test doses. When a second Dick test was applied in this series, a change of from 90 to 95 per cent from positive to negative was reported.

The dosage of toxin used by the Michigan Department of Health was arrived at by Young and Orr [2] by treating groups of Dick positive persons, varying both in amount of toxin and in time between doses in an attempt to arrive at a dosage that could be administered to get a maximum number of susceptible persons to change to nonsusceptible in three doses of toxin with the least possible reaction. Our effort to secure practically 100 per cent change from positive to negative was made with the idea that the difficulties in scarlet fever immunization that had been experienced in diphtheria immunization might be avoided. Of course, at the time these studies were carried out, information was not available as to the duration of immunity from the administration of any quantity of toxin. The retests of persons still in the institutions only emphasize the fact that the problem is still unsolved. It will be necessary to start a new series with varying amounts of toxin and retesting at very much shorter intervals so as to develop as many facts as possible as to the duration of immunity. At the present time it is quite difficult to determine what is the amount of toxin of the standard skin test dose. Three or four toxins studied in parallel on 100 susceptible persons may vary as much as 20 per cent in the number of positive reactions that the toxin demonstrates, which may account to some extent for the following protocol:

In March, 1925, twenty-six children in the Michigan Home and Training School gave positive Dick tests. As these were children to be left as controls, they were tested again in January, 1926. Only one showed a positive Dick test. It was assumed at that time that these children had had subclinical scarlet fever or had been immunized by contact with scarlet fever cases to which all of them had been exposed, but on retesting in May, 1928, five showed positive results. All of the work done in the Michigan Home and Training School was done with toxin furnished by the Scarlet Fever Committee, but the Scarlet Fever Committee toxin distributed in 1928 is slightly stronger than Scarlet Fever Committee toxin distributed in 1926. The Scarlet Fever Committee toxin in 1928 is stronger than toxin distributed in 1926, 1927 and 1928 by the Hygienic Laboratory.

The effect of basal immunity on the readings and the technical errors of manufacture and storage of toxin

2. Young, C. C., and Orr, P. F.: Dosage of Toxin for Active Immunization Against Scarlet Fever, J. A. M. A. **86**: 1340 (May 1) 1926.

are so great that the results of the Dick test must be interpreted as an approximation, not as a test of mathematical accuracy. Some evidence appeared in our work that different strains of scarlet fever streptococci will produce toxin which will give a positive reaction in some persons in whom another toxin produced by another strain of streptococcus will be negative. This has been observed by McEntee [3] and by some Japanese workers, Ando, Jurauchi and Ozaki.[4] These observations will account for the fact that some persons with apparent Dick negative reactions subsequently contract scarlet fever.

In our work in public schools and in offices of private physicians, the reactions from toxin have been observed very closely. About 7 per cent of susceptible persons treated will develop nausea after the second or third dose, about 4 per cent nausea, vomiting and purging, and about 2 per cent nausea, vomiting, purging and rash. The reactions are those of toxemia and are transitory, seldom lasting more than twenty-four hours.

The problems for future investigation which have been presented in this paper can be summed up, I think, about as follows:

1. The toxin for skin testing must be held uniform and every effort should be made to develop methods of preparation and standardization so that we may be assured of a standard skin test dose.

2. The duration of immunity in relation to the amount of toxin given should be studied more carefully over a longer time.

3. Polyvalent toxins and antitoxins should be investigated more extensively.

ABSTRACT OF DISCUSSION

DR. GLADYS H. DICK, Evanston, Ill.: It is possible and practicable to control promptly epidemics of scarlet fever by the intelligent use of quarantine based on the results of nose and throat cultures, combined with the skin test to determine susceptibility, and active immunization with the toxin, resorting to passive, temporary protection with the antitoxin only when individuals are found to be both susceptible and already infected, and later following this emergency treatment by the more permanent immunization with graduated doses of the toxin. In the prophylactic use of the antitoxin, we have found that while smaller doses may protect against the rash of scarlet fever, a dose of about 100,000 neutralizing units of scarlet fever antitoxin is required to protect against the angina in persons who are both susceptible and infected. In order to avoid unnecessarily severe reactions in immunization with the toxin, it is necessary to give graduated doses. We have tried various doses and combinations, and, up to the present, have not obtained what we consider a satisfactory immunization of any large group with less than five graduated doses of the phenolized toxin. The dependability of the skin test when properly done and the effectiveness of active immunization have been demonstrated in contagious disease hospitals during the past five years. In these hospitals, in which we allowed nurses and interns with negative skin tests to go on duty in the scarlet fever wards without any immunization, no case of scarlet fever has developed in a person with a negative skin test. Nor have there been any cases of scarlet fever among those who were found to be susceptible but who were immunized to the point of a negative skin test before they undertook the care of scarlet fever patients. The duration of the active immunity conferred by immunization with the toxin can be determined only by further observation. Thus far, we can say that the majority of susceptible individuals who are immunized to the point of an entirely negative skin test remain immune at least two years. Quarantine of convalescent scarlet fever patients and of contacts on the basis of cultures is theoretically desirable, but it presents many problems. Temporary quarantine of infected persons in a group during the time required to immunize the susceptible persons in that group is practicable and is our usual practice in controlling an epidemic. Immune contacts who become infected on exposure to scarlet fever usually get rid of the organisms within a week, but slightly susceptible contacts who become infected may harbor the organisms for a period of weeks or months.

DR. W. H. PARK, New York: We are more conservative in using antitoxin as a prophylactic after exposure to scarlet fever than after exposure to diphtheria, because in New York City scarlet fever is at present mild. There are only about fifty to seventy deaths a year from scarlet fever as against from 500 to 700 from diphtheria. Three years ago I asked one of my associates to visit every patient with scarlet fever and see whether any small children had been exposed, and if so to offer them a preventive dose of antitoxin. Of forty-three children who were injected, one developed a mild scarlet fever. We gave 2,500 units as an immunizing dose. A considerable percentage of the children who received the antitoxin developed annoying serum sickness. Seven of the 100 that did not receive serum developed scarlet fever. All made good recoveries. We prefer to do a Dick test in those who have been exposed and give an immediate dose of toxin to begin immunization. We reserve the serum for those who develop the first symptoms of scarlet fever. In institutions, especially if we give serum at first, we have much less satisfactory results, for the antitoxin remains effective in the body only two weeks, and then the patients are liable to infection from carriers. As to the therapeutic use of serum, in New York we rather advise not giving antitoxin unless the case is moderately severe. We give serum only when the temperature goes above 102 F., and we are satisfied with our results. We give for a first dose from 5,000 to 10,000 units, according to the severity of the disease. If, after falling, the temperature starts to rise, we give a second or even a third dose. Our antiscarlatinal serum is both antitoxic and antibacterial. So far as immunization is concerned, we give only 40,000 skin test doses in four injections and so omit the last large dose given by Dr. Dick before increasing the quantity. At present I doubt whether the active immunity developed from the scarlet fever vaccine is as permanent as that from diphtheria toxin.

DR. C. A. EARLE, Des Plaines, Ill.: Has a death resulted from a dose of an immunizing toxin? I have made about 3,000 Dick tests. I think that the statistics up to two years ago will have to be discarded, as there have been so many changes in the manufacture and standardization of the toxin since. I have found, by retesting children, that the Dick test is almost as accurate as the Schick test. During the early days of diphtheria work when the potency of some of the toxin seemed to have been lost, this loss was adduced to the alkalinity of the bottle, and one thing and another. I think that some of it was due to the preparation of the material, and that occurs now sometimes in the manufacture of the Dick toxin. I have used quite a quantity of the Dick toxin that is 6 months old, and it is still potent.

DR. STANLEY OSBORN, Hartford, Conn.: We receive many inquiries from general practitioners in regard to how much of the different kinds of serums or antitoxins can be used by the practitioner in efforts to cure or immunize against communicable disease.

DR. J. B. STONE, Richmond, Va.: I should like to ask a question in regard to the extent to which one can depend on the skin blanching test in deciding whether or not one should give the serum in the clinical cases of scarlet fever. We often see a scarlatiniform rash in which the skin test with commercial antitoxin is negative. I have never felt justified in giving antitoxin in the presence of a negative skin blanching test. I should like to ask whether that is the correct view.

DR. GUY L. KIEFER, Lansing, Mich.: Perhaps Dr. Dick can answer more positively the question of whether death has ever

3. McEntee, J. C. J.: Brit. J. Child. Dis. **24**: 91 (April-June) 1927.
4. Ando, Jurauchi and Ozaki: Studies on the "Toxins" of Hemolytic Streptococci: I. Relationship of the Toxins of Different Hemolytic Streptococci as Brought Out by Tests on the Human Subjects, J. Immunol. **3**: 191 (May) 1928.

resulted from immunizing doses. We have not had any such experience. The skin blanching test has not been as successful in our hands as some of the other work we have been able to do with the toxin and antitoxin. The length of the period of active immunization should be emphasized. There is a need of more knowledge about how long immunization lasts. We know that we can immunize individuals against scarlet fever. How long such immunization will last is one of the problems that should be given more study. Dr. Dick is rather too modest in saying that the Dick method of using active immunization has conferred immunity that lasted at least two years. It certainly will last two years with their method. With a smaller dose on the third count, we have shown conclusively in a large series of cases that immunity will last for three years. With the method we are using in Michigan, I think it probable that if we add the fourth dose of 80,000 units, we can extend the active immunization for quite a while. In regard to passive immunization: Formerly, when a patient with scarlet fever would get into a ward where he didn't belong, in spite of the strictest isolation after that exposure, more cases of scarlet fever developed. Now, when we make the Dick test and immunize passively, we give a dose of antitoxin to those susceptible and we have no more cross infection from scarlet fever. Whether or not this should be used in private practice is up to the individual practitioner. Passive immunization, in our experience, does not last very long. It probably lasts on an average of four weeks, and in children sometimes longer, so it is a question whether one wants to immunize with antitoxin and take a chance of having immunization run out and be obliged to repeat the immunization. It has been customary with us in Detroit, since we have started using the antitoxin, to give it in all cases because we believe that we have succeeded in reducing the complications. The after-effects of scarlet fever are bad, and if we can reduce these to some extent it is worth while to take a chance on the serum sickness by giving the antitoxin. I have not seen any reason to be afraid of the reaction. One cannot very well make a person immune to a disease like scarlet fever without in some cases producing some reaction, but what does it matter if one accomplishes the results?

DR. S. S. WINNER, Chicago: When Dr. Dick and I started immunizing for scarlet fever, we kept a record of urinary observations, temperature changes and so forth. There was no physical change. The reactions were temporary. After they passed, the individual was well again. I have handled thousands of cases of scarlet fever, and it is surprising in how many of these mild cases nephritis and other complications develop. That is why I am always in favor of the antitoxin dose in cases of scarlet fever. It does not do any harm and it is likely to do a lot of good. In a child that has had toxin-antitoxin or diphtheria antitoxin horse serum, there will usually be a fairly severe reaction. At Mooseheart there was an outbreak of scarlet fever and the resident physician gave those who had been exposed 125 doses of prophylactic antitoxin of scarlet fever, with the result that he had 125 patients for a week. In 1919 I had immunized them for diphtheria with toxin-antitoxin. We took cultures for scarlet fever and found about 400 carriers of hemolytic streptococcus. We isolated them, and watched those that had positive throats and positive skin tests. The situation was controlled, and in a few weeks after a whole institution of 1,500 had been exposed, there was only a case or two. We have not seen any more cases to date. I have had fairly good luck with the blanching test, provided it is given ample time to develop; then, on standing at a distance of about 7 to 10 feet at least looking at the reaction, one may see the blanching test appear. If the condition turns out to be German measles, there will not be any blanching at all.

Industrial Surgery.—In industrial practice the physician or surgeon at all times is under the most critical scrutiny. He must satisfy patients, employers, insurance companies, and always be prepared to prove the correctness of his treatment. The industrial surgeon is a necessity; and industrial surgery is a specialty in itself.—Eaves, James: The Industrial Physician: His Relation to Patient and Carrier, *California & West. Med.*, October, 1928.

THE ASSOCIATION OF JAUNDICE AND ASCITES IN DISEASES OF THE LIVER *

JAMES F. WEIR, M.D.
ROCHESTER, MINN.

The simultaneous occurrence of jaundice and ascites in diseases of the liver usually indicates a terminal condition. The frequency of these symptoms, as manifested at necropsy, is well illustrated in the report from the Boston City Hospital by Nissen,[1] who used Mallory's [2] classification of cirrhosis. In 117 cases, jaundice was present in twenty-four, ascites was present in thirty-seven and both jaundice and ascites were present in fifty-six. Although ascites is usually a bad omen in hepatic disease, recovery has been reported [3] and some authors are not so pessimistic as to its serious import.[4] The advent of the newer diuretics, merbaphen and the ammonium salts, has afforded another method of controlling ascites and tiding the patient over the crisis of portal obstruction until collateral circulation is more extensively established. Thus McIndoe [5] reported that, of twenty-six cases coming to necropsy, the collateral circulation became so extensive in 50 per cent that when death occurred it was from rupture of a varix.

The cases presented here represent unusual types that have been encountered in a clinical experience in more than 500 cases of varying types of jaundice during the last five years. Case 1 is an example of ascites occurring in a patient with jaundice due to obstruction of the common bile duct by calculus and who recovered after adequate surgical treatment. Case 2 is an example of subacute yellow atrophy in which the pathologic process progressed to the stage of portal obstruction. The remaining three cases represent an unusual course: the association of jaundice and ascites in a more or less acute process with evident recovery. These are given special consideration in this report.

REPORT OF CASES

CASE 1.—A woman, aged 41, had had typhoid at the age of 2, rheumatic fever at 21 and influenza at 32. Between the ages of 24 and 27 she had suffered from attacks of colic in the right upper quadrant radiating into the back. These were associated with fever and required opiates for relief. Her physician noted enlargement of the liver. Beginning in September, 1925, she suffered a severely prostrating illness characterized by anorexia, abdominal bloating, and vomiting and diarrhea, which kept her in bed for three months. In January, 1926, she noted numbness of the fingers and legs and muscular contractures in the lower extremities. Residue of this peripheral neuritis was still present at the time of examination in the clinic in September, 1927. Beginning in March, 1926, there had been a recurrence of attacks of upper abdominal colic for a few months, sometimes followed by deep jaundice of short duration. In October, 1926, gradual enlargement of the abdomen began and had been progressive.

The patient was slightly icteric and much underweight. The liver was moderately enlarged, firm and somewhat nodular.

* From the Division of Medicine, Mayo Clinic.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Nissen, H. A.: Cirrhosis of the Liver, Showing Jaundice and Ascites: An Analytic Study of One Hundred and Seventeen Cases, M. Clin. North America **4**: 555-569 (Sept.) 1920.

2. Mallory, F. B.: Cirrhosis of the Liver: Five Different Types of Lesions From Which It May Arise, Bull. Johns Hopkins Hosp. **22**: 69-75, 1911.

3. Weber, F. P.: Case of Hepatic Cirrhosis Eight and One-Half Years After Disappearance of Ascites, Proc. Roy. Soc. Med. **17**: 25-28, 1923-1924.

4. Riesman, David: Spontaneous and Operative Cure of Cirrhosis of the Liver, Tr. Am. Gastro-Enterol. A. **23**: 94-103, 1920.

5. McIndoe, A. H.: Vascular Lesions of Portal Cirrhosis, Arch. Path. **5**: 23-40 (Jan.) 1928.

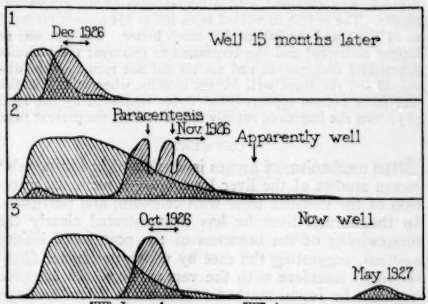
There was tenderness in the region of the gallbladder. The spleen was enlarged. Moderate ascites was present. Neurologically there was evidence of residual peripheral neuritis. Urinalysis was negative. The hemoglobin was 60 per cent (Dare); erythrocytes numbered 3,600,000 and leukocytes 6,800. The Wassermann reaction was negative. The van den Bergh reaction was direct and the serum bilirubin varied from 2.7 to 1.2 mg. per hundred cubic centimeters. Roentgen-ray examinations of the chest and stomach were negative. A clinical diagnosis was made of chronic cholecystitis with stones in the gallbladder and common bile duct, obstructive jaundice, biliary cirrhosis with portal obstruction, splenomegaly and residual peripheral neuritis. The patient was placed in the hospital for preparation for exploration and the ascites disappeared spontaneously. At operation, Sept. 29, 1927, a large soft stone (3.5 by 2.5 cm.) and several small fragments were removed from the common bile duct, which was three times the normal size. A soft crumbly stone was removed from the gallbladder. The gallbladder and common bile duct were drained. The liver was twice the normal size and its surface was of the hobnail type. Convalescence was uneventful for four weeks, when ascites recurred but was promptly relieved by the use of ammonium nitrate. The serum bilirubin at this time was 0.8 mg. and the serum gave a delayed direct van den Bergh reaction. When the patient was heard from three months ago she had gained 37 pounds (17 Kg.) and felt well, although she occasionally had spells of mild jaundice. Ascites, pain, chills or fever had not occurred.

CASE 2.—A woman, aged 49, came under observation, Nov. 16, 1926. Since her first pregnancy prolapse of the uterus had been present, for which two unsuccessful operations had been performed. Cesarean section had been performed in 1911 on account of placenta praevia. For several years she had suffered from attacks of diffuse cramp-like abdominal pain of undetermined cause, associated with distention, belching and vomiting; sodium bicarbonate gave some relief. During the past year she had noticed swelling in the lower end of the cesarean scar; in August, 1926, this was repaired and the gallbladder found to contain a calculus. The gallbladder was removed through a separate incision. Convalescence was uneventful and the patient was soon doing her housework. Five weeks after operation (six weeks prior to examiation) deep jaundice without pruritus developed. The urine was dark and the stools were acholic. There was no pain, chills or fever. During the last two weeks slight edema of the lower extremities and slight enlargement of the abdomen had been noted.

The patient was deeply jaundiced, with a brilliant yellow skin, and complained of weakness. The abdomen was slightly distended. The uterus protruded from the vagina. Large external hemorrhoids were present and there was moderate edema of the legs. The urine contained a trace of albumin and much bile. The hemoglobin was 74 per cent (Dare); erythrocytes numbered 4,080,000, and the Wassermann reaction was negative. In the material obtained from repeated duodenal drainage there were moderate amounts of light yellow bile. The serum showed a direct van den Bergh reaction and a bilirubin content of 29.4 mg. per hundred cubic centimeters. During the four weeks that she was under treatment before she died, the serum bilirubin gradually decreased to 8 mg. During this time her strength decreased. Periods of mental cloudiness occurred and finally increasing drowsiness and coma. Five days before death, purpuric areas appeared. There was also increasing generalized edema. Clinically, death was attributed to hepatic insufficiency. Necropsy showed subacute yellow atrophy of the liver, which weighed 748 Gm., with jaundice, ascites (1,500 cc. of fluid) and anasarca.

CASE 3.—A man, aged 56, had been in good health except for attacks of abdominal pain apparently originating in the appendix twenty years previously. One year before admission, after the extraction of several teeth, sciatica developed on the right side. Little had been done in the way of treatment, however, until six weeks previously, when he had consulted a physician, who prescribed cinchophen. Two weeks later painless jaundice appeared with dark urine and light stools. Pruritus was never complained of. Two weeks later the abdomen began to enlarge; the enlargement progressed rapidly and was very distressing. Edema of the lower extremities also developed. Moderate jaundice was noted on examination. The abdomen was tensely distended with fluid. The legs were moderately edematous. Neither the liver nor the spleen was enlarged. The systolic blood pressure was 125 and the diastolic 80. The urine was normal except for the presence of bile. The hemoglobin was 64 per cent (Dare); the erythrocytes numbered 4,400,000 and the leukocytes 9,400. The Wassermann reaction was negative. Roentgen-ray examination of the chest, stomach and colon was negative. The van den Bergh reaction was direct and the serum bilirubin was 8.3 mg. With restriction of fluids and salt and the administration of ammonium chloride and merbaphen, satisfactory diuresis was secured and the patient became free from the accumulated fluid. The weight decreased from 154 to 117 pounds (from 70 to 53 Kg.). The jaundice gradually declined, the serum bilirubin dropping to 2.7 mg. before dismissal, when the patient was instructed to continue on a regimen of restricted salt and fluid intake for a time. He has remained well for fifteen months.

CASE 4.—A woman, aged 37, had been well except for cystitis one and a half years previously, until June, 1926, when she noted malaise, nausea, vomiting and the onset of jaundice which became very deep and was associated with intense pruritus, dark urine and light colored stools. This illness was not associated with pain or fever, and there had not been an epidemic of icterus in the locality in which she lived. Shortly after the onset, edema of the ankles was noted. Three months after, the icterus began to clear and the pruritus ceased. Ascites began to appear, however, and paracentesis of the abdomen was necessary twice, five and three weeks prior to admission (Nov. 8, 1926). Fluid was again accumulating in the abdomen. During her illness she had lost much weight.



Relative time of occurrence and duration of jaundice and ascites.

The patient appeared ill and was slightly jaundiced. Marked ascites and moderate edema of the legs were present. The liver was not palpable at any time, but the spleen was quite large, extending 5 cm. below the left costal margin. The systolic blood pressure was 115 and the diastolic 80. The urine was normal except for some bile. The hemoglobin was 72 per cent (Dare); the erythrocytes numbered 5,150,000 and the leukocytes 10,600. The Wassermann reaction was negative. The van den Bergh reaction was direct and the serum bilirubin contained 4.3 mg. per hundred cubic centimeters. During the patient's stay at the clinic this decreased to 1.3 mg. The function of the liver tested by the dye method showed retention graded 4; on dismissal it was graded 2. Treatment consisted of the restriction of fluid and salt and the administration of ammonium chloride. Merbaphen was given once but was poorly tolerated, and was not repeated. Satisfactory diuresis, however, was obtained. On dismissal the abdomen was normal in size. The patient was heard from two months later. Ascites had not recurred and she was feeling well except for some pain in the left side of the abdomen.

CASE 5.—A woman, aged 45, had suffered from asthmatic attacks for ten years prior to 1921. Her health had otherwise been good, except for mild constipation, until the onset of the present illness, in June, 1926. At this time she noticed

loss of appetite and nausea. These symptoms progressed rapidly, so that she was able to eat toast only. Sour and greasy food, and milk, tea and coffee caused epigastric discomfort. Regurgitation of food was frequent, but she did not actually vomit. She became weak and drowsy and lost much weight. One month after the onset of this illness deep jaundice, accompanied by much pruritus, appeared; the urine was dark and the stools were colored. This persisted for three months and was beginning to clear at the time of her admission, Oct. 7, 1926. Ten days prior to admission ascites and edema of the lower extremities developed rapidly.

Moderate jaundice and general evidence of loss of weight were present. The abdomen was very tense from fluid and tender at the right costal margin. The legs were edematous. The systolic blood pressure was 115 and the diastolic 80. The urine was normal except for the presence of bile. The hemoglobin was 70 per cent (Dare); the erythrocytes numbered 3,790,000 and the leukocytes 4,200. The Wassermann reaction was negative. Roentgen-ray examinations of the chest and stomach were negative. The stools contained bile, and a free flow of bile was obtained on duodenal drainage. On admission the van den Bergh reaction was direct and the serum bilirubin was 10.4 mg. During the next three weeks the serum bilirubin gradually declined to 4.6 mg. Treatment consisted of restriction of fluid and salt and the administration of ammonium chloride and merbaphen. On this regimen satisfactory diuresis was obtained with disappearance of the edema and ascites. The weight decreased from 165 to 134 pounds (from 75 to 61 Kg.) and the patient felt much better. The diet was no longer restricted and she continued to improve; the jaundice practically disappeared and ascites did not recur. After dismissal she remained well for six months, when mild jaundice and some ascites appeared, but under treatment by the local physician she improved rapidly and is well at the present time.

COMMENT

The mechanism of ascites is elucidated in McIndoe's [5] recent studies of the liver by corrosion methods, injection of the vascular trees with celloidin, and perfusion. In the normal liver he has demonstrated clearly the intertwining of the branches of the portal and biliary systems, suggesting the ease by which periductal fibrosis could interfere with the venous flow. In atrophic cirrhosis he found marked reduction in the size of the total vascular bed of the portal system of the liver. There was a loss of the normal relationship of the portal and hepatic terminals. Microscopically, the central veins were found eccentric and finally became merged with the fibrous tissue at the periphery. Colored gelatin injections of the portal vein failed to show in the hepatic cell, whereas by injection of the hepatic artery the cells were colored, showing that their blood supply comes almost entirely from this source. Perfusion of the portal vein and hepatic artery with physiologic sodium chloride solution gave interesting results. On perfusion of the portal system at a normal pressure of from 10 to 20 mm. of mercury, a return was not obtained from the hepatic veins, but 100 per cent was obtained from the collateral veins. On raising the pressure of perfusion an increasing amount was obtained from the hepatic veins. On perfusion of the hepatic artery at a pressure of 80 mm. of mercury, 53 per cent returned from the hepatic veins, 45 per cent from the collaterals and 2 per cent from the portal vessels. In cirrhosis the collaterals remove the portal blood before it reaches the sinusoidal bed. These facts show clearly that in advanced cirrhosis of the liver, so far as the hepatic cells are concerned, a spontaneous Eck fistula has formed; that the cells depend for their nutrition on the hepatic artery and that when this becomes sufficiently involved life cannot continue.

In spite of this work, however, there is much difficulty in propounding a purely mechanical basis for the production of ascites. For example, diuresis occurs from the use of merbaphen in edema due to cardiorenal and hepatic disorders, and Keith and his associates [6] have shown its effects to be due chiefly to a metabolic action. Bollman [7] has recently been doing some interesting work in this field, following that of Greene, of Snell and of Rowntree [8] three years ago on the production of ascites by biliary obstruction. He ligates the common bile duct and removes the gallbladder and a portion of the liver in dogs. These animals seem to survive indefinitely if kept on carbohydrate food. If after three or four months, however, they are fed meat or meat extract, ascites promptly develops. After removal of the accumulated fluid by paracentesis or diuretics, it does not recur if only carbohydrate food is given. This research is suggestive of practical application in the clinical care of patients with ascites due to hepatic disease and is indicative of the limited knowledge that exists as to the mechanism of the development of ascites in diseases of the liver.

Jaundice, for practical purposes, can be classified as hemolytic, obstructive and intrahepatic. The hemolytic type will not be discussed here. Obstructive jaundice includes such cases as may be due to stone in the common bile duct, stricture, and malignant processes in the pancreas or bile ducts. To the intrahepatic group have been relegated all other types, including catarrhal jaundice, sporadic or epidemic infectious jaundice, Weil's disease, yellow fever, toxic jaundice (such as occurs in typhoid, pneumonia, typhus fever, relapsing fever, syphilis, malaria, pyemic conditions, exophthalmic goiter, and poisoning from arsenic, chloroform, mushrooms and trinitrotoluene), acute and subacute yellow atrophy and the various types of cirrhosis.

The occurrence of ascites in cases of obstructive jaundice is rare. Rolleston [9] stated that it is a general opinion that mechanical biliary obstruction seldom, if ever, causes genuine cirrhosis and that the fibrosis around the ducts from cholangeitis and pericholangeitis has little significance. Ford [10] in 1901, however, reviewed twenty-one cases from the literature (1882 to 1901) of cirrhosis with ascites caused by stone in the bile ducts and reported three cases of his own. Pathologically it was practically impossible to distinguish these from primary or hypertrophic biliary cirrhosis (Hanot type). Case 1 is representative of this group. It may be said that here there are two pathologic processes: cholelithiasis and portal cirrhosis. Rolleston [9] stated that gallstones occur slightly more frequently in cases of cirrhosis than in cases without cirrhosis. I have recently encountered a case of this type in which at necropsy the pathologist's interpretation was an atrophic type of cirrhosis with portal obstruction and choledocholithiasis as an apparently independent process. In the case presented here, however, the cirrhosis and the associated portal obstruction appeared to be secondary to the obstruction of the biliary tract and infection. This belief was based on the clinical course and the patient's apparent recovery.

The intrahepatic group of cases is somewhat confusing. There has been much discussion as to the

6. Keith, N. M.; Barrier, C. W.; and Whelan, Mary: The Diuretic Action of Ammonium Chloride and Novasurol in Cases of Nephritis with Edema, J. A. M. A. **85**: 799-806 (Sept. 12) 1925.

7. Bollman, J. L.: The Influence of Diet in the Experimental Production of Ascites, Proc. Staff Meetings, Mayo Clinic **3**: 137-138, 1928.

8. Rowntree, L. G.: Some Contributions to Our Knowledge of Diseases of the Kidney and Liver, Canad. M. A. J. **16**: 1437-1442 (Dec.) 1926; Considerations in Cirrhosis of the Liver, J. A. M. A. **89**: 1590-1597 (Nov. 5) 1927.

9. Rolleston, H. D.: Diseases of the Liver, Gallbladder and Bile Ducts, ed. 2, London, MacMillan & Co., 1914.

10. Ford, W.: Obstructive Biliary Cirrhosis, Am. J. M. Sc. **121**: 60-85, 1901.

mechanism of the development of the icterus. It is generally assumed that the lesion is essentially due to a disorder of the parenchymal cells of the liver. In certain types of cases in this group there may be an associated obstructive element in the form of cholangeitis of the finer biliary capillaries.

Catarrhal, sporadic or infectious jaundice is probably the most common type of this group and is usually of an innocent nature. An increasing number of cases are being reported, however, in which serious complications have occurred. Thus, Jones [11] reported four cases of epidemic origin that progressed to cirrhosis. Icterus gravis is said to occur occasionally as a terminal event. A considerable number of cases of acute and subacute yellow atrophy of the liver are reported in which the patients have survived and the disease has progressed to a stage of cirrhosis.[12] Thus catarrhal jaundice or acute or subacute yellow atrophy may be etiologic factors in hepatic cirrhosis.

In the usual portal or atrophic cirrhosis, jaundice may occur as an early symptom and is spoken of as "signal icterus." It is usually of slight degree and of short duration. Jaundice may occur again in this condition as a terminal event after ascites has been present for a varying length of time. In primary biliary cirrhosis jaundice is the predominant symptom and ascites occurs, if at all, only at a terminal stage.

Case 2 is illustrative of the usual unremitting downward course of the group of cases in which the condition is subacute, whereas the remaining three cases represent an atypical condition of subacute nature with recovery. As etiologic factors in case 2, the presence of long-standing cholecystic disease and the delayed effect of the recent anesthesia must be considered. The decreasing icterus in the presence of progressive degeneration of the liver is contrary to the usual course and is difficult to explain in view of the recent experimental evidence indicating that bilirubin is produced chiefly extrahepatically. It may be due to the development of mild anemia. In Case 3 atophan may have been an etiologic factor in the production of toxic icterus, as it is known that fatal or nonfatal complications of this type may follow its use.[13] Since the patient in the last three cases recovered, the pathologic changes are not known. The onset was with malaise and gastric distress followed by jaundice. The duration of the icterus varied from three weeks to three months before there was evidence of clearing; then ascites appeared suddenly and produced the most discomfort. There was not much prostration. The patients did not appear acutely ill, as is seen in cases of acute or subacute yellow atrophy. Aside from the discomfort of the ascites and pruritus, they were comfortable and able to be up and about. Treatment included chiefly measures to control the ascites. I am loathe to consider the condition as a new type in the intrahepatic group as there is already so much confusion concerning it. Moreover more time is probably necessary for ascertaining the ultimate nature and outcome of this disease process. The cases represent, however, a combination of jaundice and ascites, not due to cirrhosis, in which recovery occurred and in which the prognosis is good.

11. Jones, C. M.: Some Serious Aspects of Infectious (Catarrhal) Jaundice, M. Clin. North America **7**: 819-832 (Nov. 23) 1923.

12. Chisolm, R. A.: Subacute Atrophy of the Liver in Childhood, Brit. J. Child. Dis. **11**: 397-406, 1914. Hutchison, Robert; and Paterson, Donald: Infective Hepatitis and Cirrhosis: A Case of Subacute Liver Atrophy (Necrosis) with Consequent Cirrhosis and Commencing Regeneration of Liver-Cells (Nodular Hyperplasia), ibid. **21**: 275-279 (Oct.-Dec.) 1924. Pratt, J. H., and Stengel, Alfred: Toxic Cirrhosis Resulting from Acute Liver Atrophy, Am. J. M. Sc. **173**: 1-11 (Jan.) 1927.

13. The Danger of "Atophan," London Letter, J. A. M. A. **90**: 1229 (April 14) 1928.

ABSTRACT OF DISCUSSION

DR. J. P. SCHNEIDER, Minneapolis: Ascites and jaundice as a clinical combination is not very common. In order to get some idea of its rarity, I analyzed about 4,000 postmortem records and found twenty-three reports of persons who died having both jaundice and ascites. In one of these cases carcinoma played a rôle. Of course, there are in this postmortem material a large number of cases of carcinoma of the liver secondary to carcinoma elsewhere in the intestinal tract. Dr. Weir's paper deals more particularly with the type of patient who recovers, and he brings out the fact that the intense jaundice and ascites is not a fundamental event. In going over records for the last twenty-five years, I found that ten patients presented both jaundice and ascites. Of these ten, eight died. A necropsy was done in all of these cases. Four patients had cirrhosis; one had a primary carcinoma of the liver; one had primary carcinoma of the common duct; one had syphilis of the liver, and one had primary carcinoma of the gallbladder with secondary involvement of the liver. Two patients recovered. One of these had syphilis of the liver and was given arsphenamine; the liver became inflamed and a very intense jaundice developed. Cirrhosis resulted and during the shrinking process ascites developed. This patient was given ammonium chloride and three injections of metaphen, together with fluid and salt restriction. In one week the ascites and jaundice cleared up. The other patient was a man who had pneumonia with intense jaundice. He recovered. Following this, it became evident that he had cirrhosis of the liver which was progressing. Seven years later he had another attack of pneumonia. In the recovery he again developed jaundice, this time with ascites. Two thousand cubic centimeters of fluid was removed. It was thought that this might be a tuberculous inflammation, which is not uncommon. The fluid was negative, however, and the patient recovered.

Clinical Notes, Suggestions and New Instruments

A FIFTH CASE OF GONGYLONEMA HOMINIS IN MAN IN THE UNITED STATES

C. W. STILES, M.D., AND C. E. BAKER, B.A.
WASHINGTON, D. C.

Through the courtesy of Dr. Steiner, we have had the opportunity of examining a worm taken from the mouth of a girl and sent by her physician to Dr. McGinnes of the City Board of Health of Richmond, Va. The case report by Dr. Herbert W. Lewis, Dumbarton, Va., is as follows:

"On Aug. 1, 1928, a single girl, aged 18, well developed, weighing 160 pounds, and 5 feet 7 inches tall, of a very cheerful disposition, came to my office and gave a history of having had trouble with her mouth for about one month. She said that she was not sick but had a worm wiggling in the flesh of her lower lip, and under her tongue. On examination I found hyperemia, and swollen patches on the mucous membrane on the lower lip. She insisted that she could feel and sometimes see a worm move in different places in her lower lip but I could not see anything. I gave her an alkali mouth wash and told her to return to me if she was not cured. I heard nothing from her until September 4, when she produced the worm, 1½ inches long, about the size of a double naught ligature, which was removed by her brother (a Methodist missionary) from the mucous membrane of the lower lip one-half inch from the midline with a sterile needle. The patient was relieved of the peculiar sensation and has remained well since."

The specimen in question is about 47 mm. long and is considerably macerated, but enough of the body remains to permit the definite determination that it belongs to the genus *Gongylonema* and that it is a female. The cuticular plaques are clearly visible in the esophageal zone. The lateral flanges can be distinguished but the excretory pore could not be found with certainty. The intestine is partly macerated, especially in the caudal portion; structures were observed which are interpreted with some reserve as rectum and anus. The vulva could not be determined with certainty but the female tubes were

clearly visible and in some portions structures were observed which were apparently eggs in the course of development; the hair-pin turn of the caudal female tube was clearly seen. The transverse cuticular striae measured from 5 to 6 microns in breadth and there was a subterminal structure at the caudal end which appeared to be and is tentatively interpreted with some reserve as representing the lateral opening of a caudal gland.

Two interesting points arise in connection with this specimen; namely, that a case of *Gongylonema hominis* has occurred in a new geographic locality of the United States, and that this specimen would doubtless be interpreted by most observers (not familiar with *Gongylonema*) as either a *Filaria* or a *Mermis*. But despite its state of poor preservation, enough of the body remained to permit of its generic determination as *Gongylonema*.

We continue to use the noncommittal name *Gongylonema hominis* rather than *G. pulchrum*, or other names, because we are still open to conviction as to the exact species to which the American *Gongylonema* of man belongs.

Despite the fact that exact specific determination is *sub judice*, it is to be taken for granted that the patient obtained her infection by swallowing, accidentally or purposely as the case may be, an insect such, for instance, as the croton bug (*Blattella germanica*) or the cockroach (*Blatta americana*) or one of the coprophagous beetles.

LEAD POISONING FROM WINE

MILLARD KNOWLTON, M.D., HARTFORD, CONN.
Director, Bureau of Preventable Diseases, Connecticut State Department of Health

The case is of interest for the following reasons:

1. Lead was apparently conveyed to the patient through wine.
2. A relatively small amount of lead was required to produce symptoms.
3. An associated acute appendicitis was discovered on exploratory incision for a suspected gastric ulcer with perforation.

REPORT OF CASE

M. A., a man, aged 33, whose occupation is that of weaver in a woolen mill, in December, 1926, consulted his physician because of pains in the abdomen. There was a constant pain in the upper portion of the abdomen and lower part of the chest, and tenderness in the lower portion of the abdomen. The patient was so anemic that internal hemorrhage was suspected. December 15, four or five days after the symptoms began, he was sent to a hospital with a provisional diagnosis of perforated gastric ulcer. Exploratory incision revealed an acutely inflamed appendix, which was removed. Symptoms in the upper portion of the abdomen persisted after the operation and further study showed stippling of the red blood cells and led to a diagnosis of lead poisoning. The symptoms disappeared during the twelve days that the patient remained in the hospital.

After four weeks of rest at home, he returned to work, Jan. 24, 1927, and worked steadily until March 2. At this time he again consulted his physician because of a recurrence of pain in the upper part of the abdomen. When seen, March 5, the patient had a distinct lead line on the gums and was somewhat anemic but free from pain. The treatment his physician had given him consisted of magnesium sulphate and from 10 to 12½ grains (0.65 to 0.82 Gm.) of potassium iodide three times a day. He remained free from symptoms and returned to work, March 27.

The patient's environment was studied to ascertain the source of lead. Inquiry at the mill where he was employed as a weaver brought out the information that lead was not used in connection with the weaving of woolen cloth. The product of the mill consists largely of worsteds and cloth for upholstery in automobiles. Occasionally the man uses silk thread in the proportion of about one thread of silk to twenty-five of wool. As the silk thread seldom breaks, it is not often necessary to handle it. Even if the silk thread were "weighted" with lead, apparently the exposure would be negligible. Symptoms of lead poisoning were not observed among other weavers employed in the same mill.

On inquiry concerning the man's habits, it was learned that he had consumed about 15 gallons of elderberry wine, 5 gallons of grape wine and 1 gallon of cider since the preceding fall. He had also used a quantity of home-made beer, but the beer on examination was found not to contain lead. None of the man's family, consisting of a wife and two children, had shown symptoms of lead poisoning. The family did not participate in the consumption of wine and cider. This appeared to be the only point of difference in the habits of the man and the other members of his family that might result in his exposure to a lead hazard not shared by his family.

It was found that the wine and the cider were kept either in kegs or in 5 gallon jugs and were siphoned out through a piece of rubber hose that had been previously used as an air tube for a Prest-o-lite torch. The beer had been made by a relative and was bottled before reaching his house. Thus the beer was not siphoned through the rubber tube. This rubber tube was about 5½ feet in length, with an outside diameter of eleven-sixteenths inch and a three-eighths inch opening. It weighed about three-fourths pound (0.3 Kg.) and was reinforced by canvas to withstand considerable pressure. In using the tube to withdraw a beverage from the keg or jug, the man would suck the fluid up with his mouth to start the siphon.

Samples of the elderberry wine, the cider, the beer and a section of the hose were sent to a chemist for analysis. He reported that the hose contained 1.9 per cent lead, the wine, 0.7 part per million and the cider, 0.6 part per million, while the beer, which had been bottled elsewhere, did not contain any lead. Since the piece of rubber tubing used to siphon the wine weighed about three-fourths pound, its lead content at 1.9 per cent would be approximately 100 grains (6.5 Gm.). The total lead content of the 20 gallons of wine and 1 gallon of cider consumed during the fall and winter at 0.7 and 0.6 part per million, respectively, would be approximately 1 grain (0.065 Gm.), or 1 per cent of the total lead content of the rubber tube. How much lead had been dissolved during the six or seven years that this tube had been used for siphoning wine and cider is not known. Nor is it known whether the rate of solution had been uniform or variable. No information is available as to the amount of lead the man may have obtained by the habit of sucking the fluid through the tube to start the siphon. Thus, while the total amount of lead ingested during a period of years is not known, it appears to have been relatively small.

COMMENT

The hazard of this quantity of lead in wine may be judged somewhat on the basis of the quantity of lead in water known to be dangerous. On this point Dr. Somerville in a paper on water says that "lead to the extent of 0.25 part per million is sufficient to condemn a potable water."[1] Other writers give the amount of lead in water that may be tolerated as 0.3, 0.36, 0.5, 0.7, 0.71 and 1.0 part per million, respectively.[2] Howard of the New Hampshire State Board of Health, who has had considerable experience with waters containing lead has the following to say on this subject: "What amount of lead in drinking water should be considered poisonous? Formerly this was arbitrarily fixed at 0.50 p. p. m. Long since, however, we have come to know that half of this quantity may serve to provoke marked symptoms in some cases. In the case of a metal whose salts are so definitely classed with the poisons, it may be questioned if we are justified in drawing any dividing line between what may be pronounced 'safe' and 'dangerous' amounts."[3]

The different standards of tolerance for lead in drinking water may be due to differences in susceptibility, which appears to depend quite largely on the rate of elimination. Thus, a man who eliminates lead readily may withstand a lead hazard that would cause symptoms of poisoning in another man who eliminates less readily.

In the present case showing definite symptoms of lead poisoning, no source of lead could be found other than the beverages the man had been drinking. For this reason it was concluded that the lead in the beverages was probably responsible for the symptoms, and that the original source of lead was the rubber tube used as a siphon.

1. Somerville, quoted by Mason, W. P.: Examination of Water, New York, Wiley & Sons, 1917.
2. Weston, R. S.: Lead Poisoning by Water and Its Prevention, J. Northeast Waterworks A. **34**: 257 (Dec.) 1920, quoted by Greenburg: Pub. Health Rep. **37**: 1825 (July 28) 1922.
3. Howard, C. D.: Lead in Drinking Water, Am. J. Pub. Health **13**: 207 (March) 1923.

INTRA-UTEPINE AND EXTRA-UTERINE PREGNANCY

H. P. MILLER, M.D., ROCK ISLAND, ILL.

The condition of coexisting uterine and extra-uterine pregnancy is not extremely rare, although uncommon in the experience of any one man. Isolated case reports appear here and there in the literature at frequent intervals. The condition was recognized as far back as 1722.

Stein [1] has made a complete summary of the cases reported up to the present. He tabulates a series of thirty-four cases, or thirty-five including his own, occurring since 1913. According to Stein, Neugebauer previously had reported 170, and another series, later, of seventy-three, bringing the total number on record, including his own, to 279. Since then two other cases [2] besides my own have appeared in the literature, making a total of 282.

Several possible combinations of the pregnancy factors have been reported in the literature at various times. The uterine or extra-uterine pregnancy may be single, multiple or a combination. There may be other pathologic conditions present such as those reported by Bermann,[2] when a large dermoid cyst was present in one ovary. Several noteworthy facts are brought out by Stein's analysis. The greatest proportion of the mothers had previously borne children. In my case there was a history of three previous normal labors. In 196 cases 37 per cent of the intra-uterine fetuses came to term. In 23 per cent of 164 cases the extra-uterine fetuses came to term. The high maternal mortality is noteworthy. Of 202 mothers, forty-four, or 21 per cent, died; while of 202 intra-uterine fetuses 123, or 61 per cent, died. Of 191 extra-uterine fetuses 185, or 96 per cent, died.

REPORT OF CASE

History.—A woman, aged 37, seen, April 26, 1927, had had three previous normal labors nineteen, nine and seven years before. There were no miscarriages. Puberty was reached at 11. The periods were normal. The past history was negative for serious illness. On entrance the patient complained of pain in the lower part of the abdomen. The periods were normal until one month before examination. This lasted only a short time. A few days later while stepping off a street car the patient was suddenly seized with a severe lancinating pain in the left lower portion of the abdomen. She felt faint and nauseated and became bathed in a cold sweat. She was carried into a nearby house, where after an hour's rest the pain was relieved and she was able to be taken home. Since then there had been soreness to pressure in the left lower portion of the abdomen. During the ensuing three weeks the patient had stabs of sharp pain in the left side that were nonradiating and lasted a short time. On several occasions there was a slight flow of blood.

The general examination was essentially negative. There was tenderness in both pelvic regions of the abdomen. A mass about the size of a five months gravid uterus could be felt a little to the left of the midline.

On bimanual examination the cervix was enlarged and soft; the uterus was about the size of a five months pregnancy. There was bulging in the culdesac. A very tender mass about the size of a baseball could be felt in the right tubo-ovarian region.

Treatment.—Under ether anesthesia a nick was made in the culdesac. When the peritoneum was opened, dark liquid blood escaped. The abdomen was opened immediately suprapubically. A mass the size of a baseball consisting of clots, fibrin, tube and ovary all matted together was found occupying the right pelvis. The culdesac and left pelvis contained a huge clot which forced the uterus up, making it appear externally about at the height of a five month's pregnancy. When the cavity was swabbed out, however, the uterus was seen to be about the size of a three months' pregnancy. The uterus was not disturbed; no comment was called forth by its size, as this much enlargement was expected. The postoperative course was uneventful. The hospital pathologist reported that the mass contained decidual remnants. A pathologic report of ruptured tubal pregnancy was made.

Subsequent Course.—The uterus continued to enlarge. Motion was felt, secondary signs of pregnancy appeared, and on November 12, 1927, the patient was delivered of a normal male child.

COMMENT

This case illustrates several points: In the first place an additional intra-uterine pregnancy was not suspected here at the time of operation, since some enlargement of the uterus is expected.

No sounding or other manipulations should be practiced because of the danger of interrupting an intra-uterine pregnancy which, if present, might go to term as in this case.

A diagnosis of ruptured extra-uterine pregnancy can be confirmed by an incision in the culdesac without danger before laparotomy is performed. In this case the uterus appeared much larger externally than it actually was because of pushing up by clots in the pelvis. The natural assumption was a five months' gravid uterus with an inflammatory mass in the right pelvis.

Best Building.

1. Stein, Arthur: Coexisting Extra-Uterine and Intra-Uterine Pregnancy with the Report of a Case and a Study of Thirty-Five Cases Published Since 1913, Am. J. Obst. & Gynec. **15**: 159 (Feb.) 1928.

2. Komiches, M.: Extra-Uterine and Intra-Uterine Pregnancy, J. Akush. i. Zhen.sk. Boliez. **38**: 594-597 (Sept.-Oct.) 1927. Bermann, S. E.: Pregnancy of Five and One-Half Months Complicated by Extra-Uterine Pregnancy and Dermoid Cyst of the Ovary, Semana méd. **2**: 1498-1501 (Dec. 1) 1927.

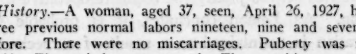
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

METRAZOL.—Pentamethylenetetrazol.—



Actions and Uses.—The action of metrazol is similar to that of camphor, but it is claimed to be more dependable, mainly on account of its greater solubility in water. Its action following injection intravenously or subcutaneously is induced promptly. Metrazol stimulates the vasomotor and respiratory centers in experiments on normal animals, but an experienced worker in this field found it a very uncertain respiratory stimulant in conditions of depressed respiration in animals, in which carbon dioxide, epinephrine and ephedrine were markedly effective; that as a circulatory stimulant it usually caused a rise of blood pressure only in convulsive doses; that it did make irregularly beating hearts beat more regularly, but only at expense of depression of rate and amplitude. The use of metrazol is reported as a sustaining agent and restorative in chronic cardiac and circulatory insufficiency, in pneumonia, and in other infectious diseases. It has been reported to be of value in the emergency of cardiovascular collapse, in shock, in respiratory failure, and in narcotic depression. On the other hand, it causes capillary dilatation in the splanchnic region, and animal experiments indicate that the intravenous injection may be distinctly dangerous. It may be combined with digitalis and the xanthine diuretics.

Dosage.—Intramuscularly or intravenously, 0.1 Gm. (1½ grains) every one to three hours; orally, from 0.1 to 0.2 Gm. (1½ to 3 grains) several times daily as required.

Manufactured by Knoll A.-G., Ludwigshafen a/Rh., Germany (E. Bilhuber, Inc., New York, distributor). U. S. patent 1,599,493 (Sept. 14, 1926; expires, 1943). U. S. trademark 249,687.

Metrazol Ampules, 1 cc.: Each ampule contains 1.1 cc. of a 10 per cent aqueous solution of metrazol.

Metrazol Tablets: Each tablet contains 1½ grains of metrazol.

Metrazol occurs as biaxial, optically negative, white crystals that are freely soluble in water. It melts at 57-58 C.

To a 10 per cent aqueous solution of metrazol add a saturated solution of mercuric chloride: a white solid precipitate results, which may be recrystallized from hot water or alcohol to yield crystals melting at 177-178 C. and leaving not more than 0.1 per cent of ash on incineration.

Transfer about 0.2 Gm. of metrazol, accurately weighed, to a wide mouth weighing bottle; allow to stand over calcium chloride: the loss in weight is not more than 0.1 per cent.

Transfer about 0.2 Gm. of metrazol, accurately weighed, to a platinum dish and incinerate: the ash is not weighable.

Determine nitrogen by the Dumas method as described in Clarke's Handbook of Organic Analysis, ed. 2, p. 199: the nitrogen is not less than 40.4 nor more than 40.9 per cent.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - - Five dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, DECEMBER 15, 1928

THE FUNCTIONS OF THE DIAPHRAGM

Knowledge of the action of the diaphragm in the processes of respiration belongs to the older acquisitions of the science of physiology; consequently it receives little discussion of a critical sort at present from the students of the functions of the organism. The muscular movements of the diaphragm share with the contractile activities of the muscles attached to the ribs the responsibility for initiating the changes in chest capacity on which the movements of the respiratory gases primarily depend. To the diaphragm the most important part in the mechanism of inspiration is usually assigned. In all acts of expulsion, sneezing, coughing, laughing, vomiting and crying, for example, the diaphragm adds power to expulsive effort. Furthermore, an anatomist has remarked that "the diaphragm, after the heart, is the most important muscle of the body." In support of this, a recent writer [1] adds that the circulation and respiration are both fundamental and equally essential functions of the body; both are produced by muscular action, the latter only partially dependent on the diaphragm and capable of continuance without its action, the former absolutely dependent on the contraction of the heart. It may be, he continues, that the diaphragm is second only in importance to the muscle of the heart; but, because respiration and circulation are equally essential to life, the muscular function that is dispensable suffers by comparison with that which is indispensable.

Such considerations raise the question of the safety, not to say the wisdom, of phrenectomy with its resulting diaphragmatic paralysis. Because of the growing popularity of phrenic neurectomy in the treatment of both tuberculous and suppurative pulmonary disease, Lemon [1] has undertaken a study of the physiologic effects in general as well as the influence on the respiratory mechanism when experimental paralytic "fixation" of the diaphragm is brought about by the operation. In his observations of dogs submitted to this operation, he noted that they could perform any ordinary activity without respiratory distress and did not seem to show evidence of lowered vital capacity. Even those in which the whole diaphragm was paralyzed by bilateral phrenic neurectomy ran and played like normal animals and after exercise could not be separated from normal dogs by those who were not acquainted with them. Necropsies failed to yield any evidence of abnormality in the heart, pericardium, pleura or lungs. Evidence was lacking of congestion or other impairment in the circulation of blood through the lungs. Lemon asserts that man also can live comfortably when half the diaphragm is paralyzed, and that he suffers only a slight loss in vital capacity. It seems probable that this loss is quickly made up by factors of compensation.

If it is true, as many clinicians now believe, that unilateral diaphragmatic paralysis provides rest for a diseased lung and produces functional benefit in disease, though it does not protect against spread of the disease by aspiration of bronchial or tracheal contents, the experiments being conducted at the Mayo Clinic laboratories help to justify the requisite operative intervention. As Lemon concludes, it is probable that respiration is maintained as a result of a mechanical process operated by the combined movements of various sets of muscles so coordinated and controlled as to make possible an exchange of air sufficient not only at rest but also under effort. The assumption is justified that groups of muscles can be rendered functionless without disturbance of respiration as a whole or the action of other groups separately. The loss in vital capacity varies with the degree of muscular dysfunction.

1. Lemon, W. S.: The Function of the Diaphragm, Arch. Surg. 17: 840 (Nov.) 1928.

THE PREVENTORIUM CHILD

It has been remarked that the chief business of a child is to grow. This applies to its mental as well as its physical development. Failure to gain, whatever its nature may be, calls for serious consideration in the formative period. Consequently the modern interest in child welfare involves aspects of growth that formerly were given scanty attention. The widespread discussions in almost every community about the underweight child are significant of the trend of the times. Physical measurements, notably those of body weight and height, have become the rule for children in the schools and likewise for those still at the preschool age. Sufficient evidence is at hand to establish conclusively that undernutrition is a frequent cause of failure to grow at the expected rate; as a consequence parents, school authorities and hygienists have begun to devote serious attention to the improvement of nutrition through better dietary practices. Mrs. Rose [1] has

1. Rose, M. S.: The Foundations of Nutrition, New York, Macmillan Company, 1928.

aptly remarked that food for the young child is not an amusement but serious business on which his whole progress in life largely depends.

The use of supplementary feedings during school hours is now common. What this practice may bring about is illustrated by the experiences of Morgan [2] and her collaborators at the University of California. In recent studies in the public schools of Oakland four groups of children were selected, one of which did not receive extra food and the others of which received half a pint of milk, one orange and a small cracker sandwich, respectively, each school day for ten weeks. Changes in weight and standing height were observed at the end of the period. The children in all three groups given supplementary feedings made large gains in growth as compared with the controls. The groups fed on milk and on crackers gained weight at about the same rate; the group fed on oranges, somewhat less. The group fed on oranges, however, made better gains in height than the others. The mere addition of calories furnished a measurable advantage for these children.

The results are even more striking as a rule when underweight children are put in a special category and given special attention to secure improvement. Sometimes they are segregated into institutions that have received the somewhat ambiguous designation of preventoriums. Hord and Roberts [3] of the University of Chicago have recognized that the majority of underweight children gain at a satisfactory or even a spectacular rate when put on the controlled life and dietary of a preventorium, but point out that there is usually a certain percentage of the children who fail to respond to this general treatment and are therefore a source of anxiety to the staff. An investigation conducted by Hord and Roberts in an Illinois preventorium indicates that even many of the "difficult gainers," who seem to fail to profit by the selected regimen, may be made to improve if special supervision is given them. The chief observation for these "exceptional" children is that the possibility of some clinical handicap existed in practically every case, and that a thorough medical examination at the close of the period confirmed these suspicions in a number of cases. Probably, therefore, these handicaps explain in part the difficulty with which these children put on weight. Gains could be produced even in these children by a consistent daily food intake only slightly above the standard, together with adequate rest and restricted activities. To insure these conditions, however, Hord and Roberts continue, requires more detailed supervision of individual children than is possible with the usual limited staff of a preventorium. It would seem, therefore, either that there should be a more careful selection of children so as to include only those who do not have any clinical handicaps and can be expected to thrive on the general preventorium procedure, or that a special dietitian should be added to the staff to take charge of such intensive work with the difficult gainers as has been described. Without some such provision, Hord and Roberts conclude, the work of the preventorium for these children appears to amount to naught, their stay in the institution is unnecessarily prolonged, the number of children that can be given care is thereby limited, and the cost per capita is correspondingly increased. Judged on the basis of cost per number of children brought up to normal, the additional expense of the special worker would be a real economy.

The importance of seeing with eyes other than those of the mere "nutritionist" when children of the preventorium type are involved is also indicated by the observations of Bronfin [4] at Denver. He reminds us that active juvenile tuberculosis is still unrecognized in the majority of instances, for the physical signs are indefinite and often misleading. Bronfin insists that the practical solution of the problem of tuberculosis in adults depends in a large measure on the attention that is accorded children with latent or active tuberculosis. Hence, in his judgment, preventoriums for the observation of children who have been exposed and the treatment for juvenile tuberculosis are needed as urgently as sanatoriums for the treatment of adults with tuberculosis.

It is sometimes assumed that the absorptive power of the underweight individual has somehow become undermined and that this circumstance, apart from more readily diagnosed physical defects, suffices to account for poor gains. The investigations recently completed by Wang, Frank and Kaucher [5] at the Nelson Morris Institute for Medical Research in the Michael Reese Hospital, Chicago, on a group of undernourished children failed to give support to such a view. In the study of ten normal and twenty-six undernourished children, no differences were found in the power to absorb food material or in the caloric utilization of the two groups. The percentage absorption was the same in all groups, regardless of the degree of underweight or of the actual caloric intake. This helps to make the intelligent dietary management of such children more promising. A further objective is stressed in the Health Education Report of the Joint Committee on Health Problems in Education when it states that "we strike at one of the roots of physical unfitness when we begin the teaching

2. Morgan, Agnes F., and Warren, Lydia: Stimulation of Growth of School Children by Small Supplementary Feedings, Am. J. Dis. Child. **36**: 972 (Nov.) 1928. Chaney, M. S.: A Comparison of the Value of Milk and Oranges as Supplementary Lunch for Underweight Children, ibid. **26**: 337 (Oct.) 1923. Morgan, A. F.; Hatfield, G. D., and Tanner, M. A.: A Comparison of the Effects of Supplementary Feeding of Fruits and Milk on the Growth of Children, ibid. **32**: 839 (Dec.) 1926. Morgan, A. F., and Tanner, M. A.: Supplementary Feeding of School Children, ibid. **33**: 404 (March) 1927.

3. Hord, Nellie; and Roberts, Lydia J.: Results of Dietary and Hygienic Control of Ten Nongaining Preventorium Children, J. Am. Dietet. A. **4**: 77 (Sept.) 1928.

4. Bronfin, I. D.: The Preventorium Child, Am. J. Dis. Child. **36**: 931 (Nov.) 1928.

5. Wang, Chi Che; Frank, Margaret; and Kaucher, Mildred: Metabolism of Undernourished Children: VI. Caloric Balance, Am. J. Dis. Child. **36**: 979 (Nov.) 1928.

of food selection to all children, regardless of whether they appear to be undernourished or not. No immediate striking gain in weight is the objective of such teaching. What we want is to rear children who are intelligent as to the rôle which food plays in their lives, who are aware of their own responsibility in regard to food selection, and are imbued with a determination to make their daily food a factor contributing to health and not working against it."

CHEMICAL WARFARE AND THE MEDICAL OFFICER

The World War introduced mankind to a host of new problems included under the designation of chemical warfare. The ready commercial availability of chemical intermediates for the production of poison gases, coupled with the success of gas warfare from a combatant standpoint, has made it imperative to take the new procedures earnestly into account. Not the least of the features involved are the medical aspects. The almost revolutionary changes to which practical medicine has been subjected in recent years further include such unexpected and somewhat unique demands as have been made on the physician by the airplane and the submarine. The various innovations affect not only the army surgeon but the naval medical officer as well. As Brown[1] of the United States Navy Medical Corps has reviewed the situation, within comparatively recent years there have been developed the special fields of submarine and aviation medicine. The subject of diving, in its physiologic and medical aspects, still presents important problems. Still another phase of activity, chemical warfare, has now been added to naval medicine. The naval medical officer is therefore confronted with the special problems involved in this new type of warfare. In order to meet the situation effectively, he must have a grasp of the fundamentals of the subject.

The situation has become so complex that even ships may include chemical warfare officers in their personnel. Yet to the medical officer at least an elementary knowledge of the tactical aspects of gas warfare is essential for the efficient recognition and handling of gas casualties at sea. He should know not only the type of gas or gases being used in an attack but also the usual ways of making such gases effective. He must also be conversant with the main features of individual and collective protection as part of the scheme of gas defense. While these matters would fall under the direction of the chemical warfare officer of the ship, the medical officer would be required to inspect the adequacy of the various antigas measures employed to assure himself that the sanitary integrity of the ship had been restored. His services as a consultant to the chemical warfare officer would fall within the scope of his duties.

Chemical warfare was not utilized by the navies of the World War. There is no assurance of such abstention in the future. A distinguished officer[2] has said that gas is a universal weapon, applicable to every sort of action. Since we can choose substances that are liquid or solid, that are irritating or highly poisonous, that are visible or invisible, that persist for days or pass with the wind, we have a weapon applicable to every act of war. It is noteworthy that the action of gas is distributed in reference to space and time to a tremendously greater extent than that of any other weapon employed in the field. From a medical standpoint, gas differs from any other weapon heretofore used in that the casualties produced differ according to the type of gaseous weapon used. When a bullet or shell is fired, its casualty-producing ability depends simply on whether or not a hit is made and the velocity and ballistic peculiarities of the missile. For their tactical value, chemical warfare agents depend on the physiologic effects which they produce. One group of agents may be primarily lethal; another may produce only temporary casualties of limited duration; another, prolonged casualties with little mortality, and still a fourth may be not toxic but only harassing by forcing wearing of the gas mask, thereby reducing efficiency to a serious extent.

The mere recital of the classification of the agents at present in use will indicate something of the complexity of the new problems that confront the war-time medical officer. He may be called on to deal with such lethal agents as chlorine and phosgene; such severe casualty agents as mustard gas, lewisite or chlorpicrin; such harassing agents as chloracetophenone; such screening agents as hexachlorethane or crude oil. In respect to their physiologic effects there are lung irritants, vesicants, lacrimators, sensory irritants, and smokes. Brown insists that all plans for future naval warfare must include the threat from mustard, lacrimators, and toxic smokes. The knowledge of toxicology, pharmacology and therapy that this sinister outlook demands will tax the intelligence and resourcefulness of the most astute physician. Something of its medical aspects so far as early treatment alone is concerned has been indicated by Brown. For the lung irritants this may be summarized as rest, oxygen and venesection; for the vesicants, bathing, the careful neutralization, if possible, and removal of any visible agent and the prevention of infection of burns; for the sensory irritants, lavage and inhalations of low concentrations of chlorine. Medicine must not merely protest against such unnecessary programs; human protection and relief cannot complacently await the millennium when warfare will have been relegated to the background of antiquated and abandoned atrocities.

1. Brown, E. W.: Chemical Warfare and the Naval Medical Officer, U. S. Naval M. Bull. **26**: 217 (April) 1928.

2. Fries, A. A.: Chemical Warfare Magazine **6**: 15, 1923.

Current Comment

THE CONTROL OF PROTEIN IN THE DIET

At the conclusion of an address before the New York Association of Dietitians at the New York Academy of Medicine on the control of protein in the diet, Du Bois [1] expressed the belief that physicians are going to pay more attention in the future to the dangers of partial protein starvation in chronic disease. The significance of this comment becomes more apparent when it is recalled that many clinicians are still endeavoring to restrict the protein intake to a low level in practically all patients who are supposed to have nephritis or high blood pressure. They do this, it is alleged, because the excretory power of the kidney is more or less impaired and they are afraid of overtaxing these organs. This custom recalls to mind some of the seemingly contradictory practices in the history of pediatrics. At a time when so-called percentage feeding had its greatest vogue, students were regularly warned of the danger of too large concentrations of protein in milk. The product from the cow was advisedly diluted or otherwise manipulated so as to furnish a food more nearly comparable in protein content with human milk. Yet within a few years some of the most threatening alimentary conditions of infancy were treated everywhere with so-called protein milk, a product having a high content of casein and a low content of whey. In commenting on this complete change of attitude toward protein, Du Bois pointed out that casein is not harmful. Protein tolerance is greater than fat or carbohydrate tolerance. Indeed, large quantities of the latter are more readily digested in the presence of a high percentage of casein. Casein also has a therapeutic action as well as a nutritive one. The doctrine of "low protein" for the adult harks back to the studies of a quarter of a century ago which showed what may be termed the minimum of essential protein intake but were interpreted to represent something approaching the optimum. The admonitions to avoid "overwork" of the liver and kidneys in the catabolism of protein were scarcely founded on a sound basis of experimental proof. Yet they gained advocates because of their apparent reasonableness. Economy in nutrition became a slogan. Today, however, there are demonstrable instances of actual diminution in the serum proteins in certain types of nephritis in which good gains follow a liberal protein intake. It is easy to deplete the body in respect to protein when a diet poor in that foodstuff is fed to patients that have a heightened metabolism. Without laborious "balance" tests, the losses may readily be overlooked. Hence there is a growing respect for a more open attitude of mind with reference to the protein factor in diet. As Du Bois has expressed it, if a Wall Street simile may be used, there seems to be a rise in the protein stock market.

1. Du Bois, E. F.: The Control of Protein in the Diet, J. Am. Dietet. A. 4: 53 (Sept.) 1928.

THE FUEL OF MUSCULAR WORK

What constitutes the "fuel" of muscular work? The answer to this question continues to be given in various ways by different physiologists. It is conceivable that any of the foodstuffs, proteins, fats or carbohydrates, might function as sources of energy for the contractile processes. There is plenty of evidence, however, that the proteins are, to say the least, not the preferential food fuel for muscular performance. Chauveau was responsible for the idea that fat must first be converted into sugar before being available for mechanical work. It has been estimated that such a physiologic procedure would be an expensive one entailing, as it might, a loss of nearly 30 per cent of available energy if fat were changed to sugar. Some writers have used this and other supposed evidences in support of the argument that the muscles can get their energy only by the breakdown of carbohydrate and that fat is used only by first being transformed into carbohydrate. This is contrary to the earlier assumed isodynamic equivalence of the different foodstuffs for muscular work. From a series of experiments conducted by Krogh and Lindhard [1] in 1920 at Copenhagen University wherein the persons investigated lived on diets poor in protein but containing large quantities of fat and carbohydrate, respectively, it was concluded that work is more economically performed on carbohydrate than on fat. When the work was sufficiently severe, the subjects performed it with greater difficulty on fat than on carbohydrate and became much more tired. The work of the body was about 10 per cent more efficient on carbohydrate than on fat as a source of its energy. However, Krogh and Lindhard believed that ordinarily the organism maintains during work a remarkably constant proportion between the amounts of carbohydrate and fat catabolized. This proportion is evidently a function of the available supplies of the two sources of energy. The elaborate studies of Marsh and Murlin [2] at the University of Rochester point in the same direction, indicating a somewhat greater efficiency in the metabolic combustion of pure carbohydrate for the genesis of muscular work. While such results apply only to rather extreme conditions of nutrition, they can no longer be overlooked. It might be assumed that after excessive combustion of fat the possible acidosis, or the subjective symptoms of lassitude and fatigue, are responsible for the altered efficiency. Marsh and Murlin assert that there is no direct evidence that either of these would exert any influence. The fact that one has no desire to work does not of necessity mean that when one does work more heat will be produced than when one does the work eagerly. Granted that it takes more will power, they add, will power must be classed as a mental activity, and the evidence for an increase in the total metabolism caused by mental work is as yet not conclusive. In fact, Johanssen reports that a subjective sense of strain or fatigue has no influence on the metabolism.

1. Krogh, A., and Lindhard, J.: The Relative Value of Fat and Carbohydrate as Sources of Muscular Energy, Biochem. J. 14: 290, 1920.
2. Marsh, M. Elizabeth; and Murlin, J. R.: Muscular Efficiency on High Carbohydrate and High Fat Diets, J. Nutrition 1: 105 (Nov.) 1928.

Association News

FELLOWSHIP AND SUBSCRIPTION DUES NOW PAYABLE

For the past several years Fellows and subscribers have saved the Association thousands of dollars annually by remitting their dues on receipt of a colored "Dues Slip" enclosed in THE JOURNAL. The colored slip covering 1929 dues is inserted this week. As there are more than 95,000 Fellows and subscribers, one can easily appreciate the saving if each individual will consider the slip a personal statement and remit without delay. It is rather fascinating to speculate on the fact that the entire matter of paying dues to the American Medical Association could be taken care of in five minutes' time if each Fellow and subscriber would do his part. Those whose dues for 1929 are already paid will naturally disregard the colored slip. It should be noted, however, that the slip provides for subscriptions to all of the special journals published by the Association and likewise to *Hygeia*. Its use therefore affords a convenient way to take care of all dues and subscriptions for 1929 with one remittance.

THE PORTLAND SESSION

Application Blanks for the Scientific Exhibit

The circular letters and application blanks for the Scientific Exhibit, Portland, Ore., Session will be ready for mailing, Jan. 3, 1929. Any who desire an application blank may obtain one by addressing Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

MEDICAL BROADCAST FOR THE WEEK

The American Medical Association Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association broadcasts daily at 10 o'clock in the morning, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of December 17 to 22 will be as follows:

December 17. "The Degenerative Diseases," by Dr. Morris Fishbein.
December 18. "Uncle Sam on the Lookout for Disease," by Dr. R. G. Leland.
December 19. "Vaccination Legislation," by Mr. J. W. Holloway.
December 20. "The Relation of Air to Health," by Dr. R. G. Leland.
December 21. "Agencies Which Have Influenced Medical Education in the United States," by Dr. N. P. Colwell.
December 22. "Midwestern Pioneers in Medicine," by Dr. James Nall.

Evening Health Hints from Hygeia at 8 o'Clock, Central Standard Time

December 17. Too Much Rhubarb.
December 18. Drink Six Glasses of Water a Day.
December 19. The Eat More Plague.
December 20. Don't Fight Shadows.
December 21. Stop Stuttering and Stammering.
December 22. Bobbed Hair.

Paradoxes in Medicine.—By a curious paradox, in medicine sometimes quite opposite causes lead to entirely similar symptoms and lesions. For example, too many red blood cells may cause the same symptoms as too few, and we see in polycythemia vera the same lassitude, breathlessness, and gastrointestinal disturbances, etc., that we encounter in pernicious anemia; an entirely normal kidney may excrete an excessive amount of pale urine, and a greatly atrophied kidney may do the same; an emphysematous lung may fail to function normally in gaseous exchange, and a partially atelectatic one may cause similar disturbances of function with breathlessness as the result of each; coma may follow either hyperglycemia or hypoglycemia. In much the same way, both too little and too great activity of the thyroid results in myocardial disturbance, with resultant symptoms that may not differ greatly, whether the cause lies in hypo- or hyperthyroidism.—Christian, H. A.: Myocardial Disturbances Due to Abnormal Thyroid Function and Their Management, *Pennsylvania M. J.*, November, 1928.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Arthur H. Graham, Wetumpka, head of the Elmore County health unit, has been promoted to the position of district health officer of southeastern Alabama, comprising nineteen counties, and Dr. Lewis Roy Poole, Dothan, has become head of the Elmore County health unit.——Dr. R. A. Burns has been appointed warden of Kilby Prison; he will continue to conduct the work of physician inspector of state prisons also.

CALIFORNIA

Hospital News.—The twenty-fifth anniversary of the opening of the Pottenger Sanatorium, Monrovia, was celebrated, December 5, by ex-patients and friends; a dinner was given to members of the Trudeau Society and other local physicians. ——The new $500,000 maternity wing of the Children's Hospital at Los Angeles was opened, September 12.

Influenza in Los Angeles.—The state health officer, Dr. Walter M. Dickie, Berkeley, reports that Los Angeles County had had 5,182 cases of influenza up to December 1 in the present outbreak, while the total for the state under observation at that time was 8,712. In Los Angeles, 600 new cases were reported, December 6, and in the first six days of December there were 2,821 cases, among which there had been seventy deaths.

Court Reinstates Physician.—Judge Griffin, November 27, vacated and set aside an order of the California State Board of Medical Examiners which, at its October meeting, revoked the license to practice of Dr. Clayton E. Wheeler of San Francisco and Los Angeles. Dr. Wheeler's license is said to have been revoked by the board on the ground that he advertised his skill at curing certain ailments. The attorney for the board gave notice immediately after the decision was rendered by the court that an appeal would be taken from the decision.

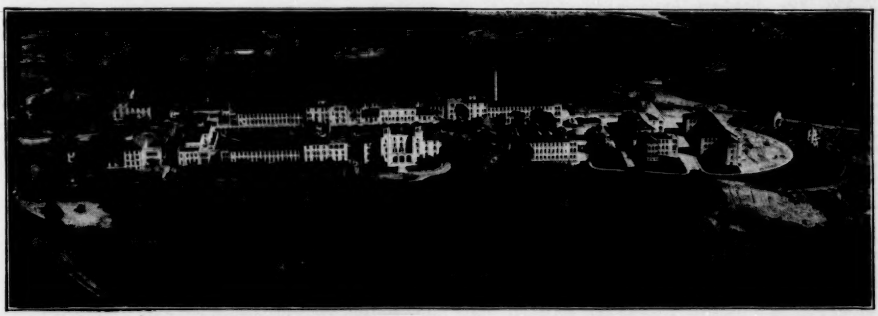
Society News.—A symposium on acute traumatism was presented before the Los Angeles County Medical Association, December 6, by Drs. Sterling Bunnell, San Francisco, Carl W. Rand, William Wallace Dodge and William B. Bowman, Los Angeles. The society will hold its annual dinner dance, December 20, when a "Christmas jinx program" will be presented. Each member may invite one member of his family or a friend. ——Dr. Albert Brachet, professor of anatomy and embryology, University of Brussels, Belgium, will lecture, December 17-19, at the University of California on "Activation and Fertilization of the Egg"; "Heredity as an Embryologic Process," and "'Organizators' and Their Behavior in the Development of the Egg."

The Largest Navy Hospital.—On a hill in Balboa Park, San Diego, overlooking the bay, is the largest navy hospital in the United States. In the last four years, its capacity has been increased to 1,000 beds. In the near future, it is proposed to extend the accommodations to include a hospital corps barracks, an amusement building, an additional south ward and further accommodations for the families of officers and enlisted men. The hospital, which is on the approved list of the American Medical Association, has about fifteen interns commissioned in the reserve corps of the navy and on probation for commission in the regular corps. During the last year, according to the *Western Hospital and Nurses Review*, a building for officer patients has been added at the north end of the grounds, and at the south end a 185 bed building for contagious diseases. South of the contagious ward is a new building to accommodate 150 students in training for hospital apprentices. The training school was formerly at Mare Island. Hospital corps men are trained here in nursing, minor surgery, laboratory and dispensary work and drill, and on the completion of the course they are sent to the hospital for additional instruction. Advanced instruction for pharmacists' mates is given here. In addition, four new sets of quarters for officers have been erected, and a cold storage plant and a morgue. The hospital grounds have tennis, basketball and handball courts with locker and club rooms. An occupational therapy department has been started

and an outpatient department, which last year made nearly 6,000 home calls and about 20,000 office calls. In 1927, 1,084 operations were performed in the naval hospital, in addition to 1,484 tonsillectomies and nasal operations. There are thirty-five female nurses on duty. San Diego, in 1925, gave the hospital an additional 5½ acres in the park, extending the hospital grounds to more than 22 acres. The commanding officer of the naval hospital at San Diego at the time of this report was Capt. Raymond Spear.

DISTRICT OF COLUMBIA

Undulant Fever Contracted in Laboratory.—Dr. Edward Francis, U. S. Public Health Service, known for his investigation of tularemia, recently contracted undulant fever while conducting experiments in the Hygienic Laboratory and was confined to the naval hospital. Dr. Francis' lectures to medical societies on undulant fever have drawn attention to the increase of the disease in this country. There have been, it is reported, 354 authentic cases studied so far in thirty-one states, and in a considerable portion of them goat's milk was not implicated. Undulant fever is also known by the term malta fever because of its first identification on the island of Malta about forty years ago.



United States Naval Hospital, San Diego, Calif.

GEORGIA

Society News.—The Fulton County Medical Society, Atlanta, was addressed, December 6, by Dr. Cyrus W. Strickler on "Precordial Pain Simulating Angina Pectoris."——Dr. E. Bates Block, Atlanta, addressed the Medical Society of the County of Kings, New York, November 16, on "Treat the Mind as Well as the Body."

Warm Springs Dedicates Swimming Pool.—A $30,000 glass enclosed swimming pool, presented by Mr. and Mrs. Edsel Ford, Detroit, was dedicated, Thanksgiving Day, at Warm Springs. The Warm Springs Foundation is endeavoring to develop the bathing facilities at that place for the treatment of patients crippled by infantile paralysis. The dedication exercises consisted of a water carnival in which some of the fifty patients present gave a symbolic representation of mythical characters. Among the patients were Franklin D. Roosevelt, governor-elect of New York, and the pioneer in the development at Warm Springs.

ILLINOIS

Personal.—Dr. Ezzat D. Akers, Chicago, has been appointed surgeon for the Valier Coal Company and the C. B. & Q. Railroad at Valier.——Dr. Walter W. Boyne, East St. Louis, has been elected coroner of St. Clair County and has appointed as deputies Drs. Leo L. Madden, East St. Louis, and Rudolph C. Heiligenstein, Belleville.——Dr. Ralph A. Kinsella, St. Louis, addressed the Adams County Medical Society, Quincy, November 12, on "Recent Studies of Rheumatism."

Physician and Nurse Sentenced to Penitentiary.—Dr. Joseph P. Moran, La Salle, began serving a sentence of from one to ten years in the penitentiary at Joliet about November 17, following his plea of guilty to a charge of performing a criminal abortion last July on a 19 year old girl. The nurse who is said to have assisted in the operation, Mrs. May Bowers, and who cared for the patient during her fatal illness, was given a similar sentence. On arrival at the penitentiary, Dr. Moran was assigned to work as physician in the hospital of the old prison.

Chicago

Professor Poll to Lecture at Chicago.—The University of Chicago announces that Dr. Heinrich Poll, professor of anatomy at the University of Hamburg, Germany, will lecture at the Albert Merritt Billings Hospital, December 20, at 4:30 p. m., on "Adrenalin, Insulin, and Sex Hormones from the Viewpoint of Their Interrelationship." Members of the Chicago Medical Society are cordially invited.

Award to Professor Bovie.—At the annual banquet of the Radiological Society of North America, December 6, William T. Bovie, Ph.D., professor of biophysics, Northwestern University Medical School, was awarded the John Scott medal, a Philadelphia award which includes $1,000, for contributions to medicine on the study and development of equipment whereby incisions may be made with an electric current instead of the knife. Electrical surgery, Dr. Bovie said, will find its greatest usefulness in the field of general surgery. Operations which usually are accompanied by much loss of blood have been performed by electrical surgery without bleeding. The current closes the blood vessels as it makes the incision. In operations on the breast, for example, an anesthetic is not necessary and the patient is fully conscious. Operations on the brain were performed in Boston, where Dr. Bovie was on the faculty of Harvard University Medical School. A preliminary report on "Electro Surgery as an Aid to the Removal of Intracranial Tumors," by Dr. Harvey Cushing, Boston, appears in the December *Surgery, Gynecology and Obstetrics.*

IOWA

Personal.—Dr. Charles A. Dimond has been named city physician of Keokuk to succeed Dr. William Frank Brown, resigned. Dr. Dimond was formerly city physician for several years.——Dr. August Groman, Odebolt, was rescued when the steamship *Vestris* sank at sea off the Virginia Capes, recently.

Society News.—The Iowa and Western Illinois Dermatological Society was organized in Davenport, October 30, with Dr. Robert E. Jameson of that city, president; Dr. James C. Kessler, Iowa City, and Dr. Foster Victor Brown, Sioux City, vice presidents; Dr. William B. Wakefield, Peoria, treasurer, and Dr. Arthur T. Leipold, Moline, Ill., secretary.——Dr. Robert H. Crawford has resigned as assistant medical director of the Central Life Insurance Company, Des Moines, and will locate in Algona.——A heart and lung clinic was held under the direction of the Iowa Tuberculosis Association at the October 26 meeting of the Grundy County Medical Society at Grundy Center.——Among others, Dr. George H. Scanlon, Iowa City, addressed the Johnson County Medical Society at the October meeting on "Supracondylar Fractures."——Dr. Edmund Andrews of the University of Illinois College of Medicine, Chicago, addressed the Linn County Medical Society, Cedar Rapids, October 11, on "Newer Aspects of Liver Diseases."——The Marion County Medical Society held a symposium on blood pressure, October 25; the speakers were Drs. Harold E. White, Knoxville; Furman P. Ralston, Harvey, and Harry C. Payne, Pella.——The Boone-Story County Medical Society met at Ames, October 4; among the speakers were

Dr. Nelson M. Whitehill, Boone, on "Goiter," and Dr. James O. Ganoe, Ogden, on "Allergic Reaction in So-Called Hay-Fever and Bronchial Asthma."——Lieut. Col. Fielding H. Garrison, U. S. Army Medical Corps, addressed the Des Moines Academy of Medicine, November 19, on "Medicine as an Agency in the Advance of Science and Civilization."

LOUISIANA

Society News.—Dr. Carl J. Wiggers, Cleveland, delivered the Chaille Memorial Oration before the Orleans Parish Medical Society, New Orleans, December 3.——The first unit of the new Presbyterian Hospital, New Orleans, was dedicated, October 12; the building was named in honor of Dr. James M. Batchelor.

Health at New Orleans.—Telegraphic reports to the U. S. Department of Commerce from sixty-five cities with a total population of about 30 million, for the week ending December 1, indicate that the highest mortality rate (23.6) was for New Orleans, and that the rate for the group of cities as a whole was 12.6. The mortality rate for New Orleans for the corresponding week last year was 19 and for the group of cities, 12.3. The annual rate for sixty-three cities for the forty-eight weeks of 1928 was 12.8, as against a rate of 12.1 for the corresponding weeks of last year.

The Fife Brothers Again. — Representatives of the Louisiana State Board of Medical Examiners were granted an injunction in the civil district court at Shreveport, November 27, restraining Joseph B. and Walter W. Fife, chiropractors of New Orleans, and P. R. June and George T. Hanning from practicing medicine. The Fife brothers, who have been in New Orleans for years, established a branch in Shreveport in charge of June and Hanning. The Fifes have been brought into court on previous occasions on account of their lack of a license to practice.

MASSACHUSETTS

Personal. — Dr. Roderick B. Dexter, Boston, has been appointed superintendent of the Foxboro (Mass.) State Hospital.—— Dr. John S. Hodgson has been appointed visiting neurologic surgeon to the state cancer hospital at Pondville. ——Dr. Herbert E. Stockwell, according to the New York *Times*, was bequeathed $15,000 in the will of the late Miss Virginia Butler of Stockbridge, whose family physician he was. ——At the December 5 stated meeting of the New York Electrotherapeutic Society, Dr. A. Bern Hirsh, New York, presented a memorial sketch of the activities of the late Dr. Frank Butler Granger, Boston.

Gordon Hodges Bryant Is Not a Harvard Man.—Under the title "Another Impostor," the *Bulletin* of the Harvard Medical School Alumni Association states that one Gordon Hodges Bryant, who is said to travel around the country "in a mental telepathy act," has never enrolled in any department of Harvard University and is not a graduate of Harvard University Medical School, as he is said to claim. Bryant is reported to have also claimed that he was trained at the Perkins Institute and Massachusetts School for the Blind at Watertown, Mass. That institution, however, states that no such name appears on its records.

Conference on Mental Hygiene. — The Massachusetts Society for Mental Hygiene, the Boston Council of Social Agencies and the Boston Health League will cooperate in a conference on mental hygiene at the Chamber of Commerce, Boston, January 29. Dr. C. Macfie Campbell, Cambridge, will preside; among the speakers will be Dr. George M. Kline, Boston, on "What Mental Hygiene and Psychiatry Offer the Fields of Public Health and Social Work"; Prof. Charles Edward A. Winslow, New Haven, Conn., "Significance of Mental Hygiene to Public Health"; Dr. James S. Plant, Newark, N. J., "Rôle That Mental Hygiene Plays in School Hygiene," and Miss Frances Stern of the Boston Dispensary, "A Nutrition Worker Looks at Mental Hygiene."

Society News.—Dr. Howard B. Sprague, Boston, addressed the Bristol South District Medical Society at Fall River, November 1, on "Fate of the Cardiac Undergoing Surgery." ——Dr. James P. O'Hare addressed the Greater Boston Medical Society, November 13, on "Nephritis and Nephrosis."—— The Massachusetts Institute of Technology, Cambridge, issued invitations to the dedication of the Richard M. Homberg Memorial Infirmary, November 13.——Dr. Douglas A. Thom, Boston, has been elected president of the Massachusetts Psychiatric Society for the ensuing year, and Dr. Winfred Overholser, Boston, secretary.——Dr. William Healy, lecturer for the Baker Foundation, spoke at Boston University, November 26, on "The Psychology of Delinquency," one of a series of ten lectures on the subject of physiologic and psychologic phases of behavior, which will be concluded, January 2 and 7, by a study on "Psychology of Reward and Punishment."

Laymen to Investigate Physicians' Fee Table. — The chairman of the Special Commission on the Necessaries of Life made known, November 27, that investigation will be made of the fee table adopted by the Arlington Doctors' Club in Lexington and Arlington. Complaints have been registered by a resident of East Lexington. The fee table, as noted in the Boston *Transcript*, calls for a fee of $4 for a day visit in case of ordinary attendance; for attendance during labor, $50, and for minor operations, from $10 to $100, while additional fees may be charged for laboratory tests and other diagnostic procedures and deductions may be made as charity may require. The chairman of the special commission realizes that the fees for services of physicians are outside its jurisdiction. The commission feels that the problem is important and serious, and cannot be ignored by the leaders of the medical profession.

MINNESOTA

Personal.—Dr. George A. Paulson, Duluth, has gone to Colombia, South America, to take charge of the Standard Oil Company Hospital.——Dr. Frederick F. Kumm has been appointed assistant superintendent of the state sanatorium at Ah-Gwah-Ching.

Society News.—Prof. F. d'Herelle, Yale University School of Medicine, New Haven, Conn., gave a Mayo Foundation lecture at Rochester, November 15, on "The Phenomenon of Recovery."——The Hennepin County Medical Society held a symposium on the thyroid, December 3. Dr. Chauncey A. McKinlay spoke on therapy with thyroid extract; Dr. Martin Nordland presented moving pictures demonstrating preliminary hemostasis in goiter operations, and Drs. H. L. Fowler and William A. H. Hanson spoke on surgical anatomy of the thyroid.

Gabrielson Goes to the Workhouse. — M. Gabrielson, Minneapolis, who has been listed in the telephone directory as a physician and surgeon, and has maintained an office for years, was sentenced to one year in the workhouse in November for practicing medicine without a license. If Gabrielson decides to close his office after serving fifteen days of the sentence, the court will entertain an application for suspension of the balance and place him on probation. The complaint was filed by the state board of medical examiners. The defendant pleaded not guilty, October 17, and later pleaded guilty. The sign on the door of his office at 4159 Washington Avenue, North, read: Dr. M. Gabrielson—Rheumatism Specialist.

MISSOURI

Personal.—Dr. Frederick A. Jostes, St. Louis, has resigned as director of the Missouri State Crippled Children Service and will be succeeded by Dr. George Kenneth Coonse, Boston. Dr. Jostes intends reentering private practice in St. Louis and Columbia.

Society News.—The Jackson County Medical Society, Kansas City, commemorated the tercentenary of Dr. William Harvey's publication of De Motu Cordis, November 27. Dr. Ralph H. Major exhibited lantern slides and spoke on "A Visit to Harvey's Alma Mater—Padua"; Dr. Logan Clendening spoke on "The Life and Labor of William Harvey." The society held its annual dinner dance and bridge party, November 20, at the Blue Hills Country Club.——Dr. Cleveland H. Shutt has been elected president of the St. Louis Medical Society for 1929. The society was addressed, December 4, by Dr. August A. Werner on "Myasthenia Gravis"; by Dr. Quitman U. Newell, "Time of Ovulation in the Menstrual Cycle as Checked by the Recovery of Ova from the Fallopian Tubes," and by Dr. Louis Cohen on "Endocrine Factors in Obesity."—— Dr. Young D. Craven, Excelsior Springs, read a paper on "The History of Medicine" before the Clay County Medical Society, October 25, and Dr. Austin B. Jones, Kansas City, on "Diagnosis and Treatment of Cardiac Disorders."—— Dr. Wenzel C. Gayler, St. Louis, councilor for the twentieth district, addressed the Franklin County Medical Society, October 16, on the use of obstetric forceps, and Dr. Charles F. Briegleb, St. Clair, on physical therapy in general practice. ——Dr. Warren P. Elmer addressed the St. Louis Medical Society, December 11, on "Malignant Hypertension"; Dr. Drew W. Luten on significance of certain electrocardiograms usually diagnosed "left ventricular predominance," and Dr. Samuel B. Grant, "Management of Congestive Heart Failure in Goiter Patients."——Col. George A. Skinner, medical corps, U. S. Army, will address medical reserve corps officers at St. Louis University School of Medicine, December 17. All members of the St. Louis Medical Society are invited.——At the annual meeting of the Ninth Councilor District Medical Society,

Mexico, November 22, Dr. Alphonse McMahon, St. Louis, among others, discussed "Hearts in Relation to Thyroid Disease," and Dr. Wenzel C. Gayler, St. Louis, "Prolonged and Difficult Labor."

NEW YORK

Olean Requests Resignations.—A petition signed by a large number of residents of the city of Olean in Cattaraugus County, presented to the mayor, expressed a desire that the city health officer, Dr. W. E. McDuffee, and the three members of the water board resign in view of the recent epidemic of typhoid, the cause of which was determined by the state health officer who conducted an investigation. The petition requested also that a full-time health officer be appointed. The nineteenth death growing out of the epidemic occurred, November 24. A report, November 28, stated that the four city officials whose resignations were requested had turned them in to the council, and that they had been unanimously accepted. (THE JOURNAL, December 8, p. 1812.)

New York City

Work for Girls with Heart Disease.—A workshop for girls with heart disease was opened, October 26, at the Young Women's Hebrew Association, New York. Mrs. Felix Warburg donated the space for the shop. A nurse will also instruct the girls in sewing with a view to helping them earn their own living. The shop is equipped to care for thirty patients; if successful, additional shops will be opened. Dr. Irving R. Juster is the medical attendant.

Hospital News.—The Jewish Hospital, Brooklyn, dedicated three new buildings, December 2, increasing its capacity to 650 beds. The $4,000,000 expenditure provided a new eleven story hospital building, living quarters for 200 pupil nurses and a memorial auditorium seating 400. The third building of the group was a six story employees' building given over to the house staff, the nonprofessional employees and the power plant. The old main building is to be reconstructed and the former nurses training school renovated for use as a children's hospital.

Hospital Bequeathed $18,632,176.—Following appraisal of the estate of the late Payne Whitney, November 22, it was reported that Mr. Whitney had bequeathed to New York Hospital an endowment of $18,632,176; to Cornell Medical College, $2,823,057, and to the New York Public Library, $6,210,725. The net value of the estate was nearly $179,000,000; according to the New York *Times*, it was the largest placed on public record in the history of the nation. Mr. Whitney distributed more than $45,000,000 to charities, libraries and institutions of learning.

Society News.—At the inauguration of the lectures of the International Spanish Speaking Association of Physicians, Dentists and Pharmacists, November 27, Dr. George David Stewart, presided, and among the speakers were Dr. J. M. Gershberg, Del Instituto Rubio de Madrid; Dr. Henry H. Rusby, dean, and professor of materia medica college of pharmacy, Columbia University; Dr. Max Einhorn, and John Oppie McCall, D.D.S. ——The New York Polyclinic Medical School and Hospital has opened its new physical therapy department under the direction of Dr. Richard Kovacs. The department will serve for teaching, research and the treatment of patients.——At the annual election of the New York Academy of Medicine, December 6, Dr. John A. Hartwell was elected president to serve two years. ——The annual address of the Eastern County Medical Society was given, December 14, at the New York Academy of Medicine by Dr. Shirley W. Wynne, commissioner of health, on "Health Problems of the City of New York."——Kings County Medical Society, Brooklyn, will be addressed, December 18, by Dr. Konrad E. Birkhaug, Rochester, on "The Antitoxin Treatment of Erysipelas."

Posthumous Report by Noguchi.—Before sailing on his fatal trip to Africa, Dr. Hideyo Noguchi planned a study in Peru of insects related to Carrion's disease at the invitation of the department of health. The Rockefeller Foundation sent an entomologist to Peru for five months with the result that the phlebotomus was proved to be an agent that transmits oroya fever and verruga peruana. The story of this malady as told by *Science* goes back to the seventeenth century, when the faces and limbs of the Indians were said to have been covered with warts varying in size up to that of an egg. During the construction of the railway across the Andes in 1870, thousands of laborers died between Lima and Oroya of a disease which caused severe anemia and warts. It did not exist at sea level but appeared as the mountains were approached. In some canyons it was severe, and a few miles away might not exist. Oroya fever and verruga were then regarded by the public as different forms of the same disease, and David Carrion, a medical student, settled the question in 1885 by inoculating himself with tissue juice from "verrugas." He contracted oroya fever and died. In 1905, Dr. Barton of Peru discovered in the erythrocytes of patients with oroya fever rods (*Bartonella bacilliformis*) resembling bacilli. He found similar "rods" in the blood of patients with verruga. The Commission of the Harvard School of Tropical Medicine in 1913 regarded these bodies as protozoal organisms, but failed in attempts to cultivate them. In 1925, Battistini brought to Dr. Noguchi blood from a patient with oroya fever in which Noguchi found "rods" which he was able to cultivate. He injected cultures into monkeys and caused a disease resembling oroya fever and verruga. The cause having been determined, the question of the mode of infection remained unsolved. As evidence had been found by Townsend that the phlebotomus transmitted oroya fever, the next step was to study the insects in localities where the disease occurred. It was this work which Noguchi planned before sailing. Phlebotomi collected in Peru included *Phlebotomus verrucarum* Townsend, *P. noguchii* and one other species. Noguchi's associates, Shannon, Tilden and Tyler, are confident that *P. noguchii* is a carrier of this disease. They tested by inoculation ticks, lice, bed bugs, mosquitoes, flies and midges, none of which harbored *Bartonella bacilliformis*. They injected suspensions of crushed insects into monkeys, and then made cultures of the monkeys' blood. Four different lots of phlebotomi were thus shown to carry the causative agent. Cultures obtained from the injected monkeys produced experimental verrucous nodules with recovery of *Bartonella* from the blood and nodular tissue.

OHIO

Annual Academy Meeting.—The annual meeting of the Academy of Medicine of Cleveland, December 21, will be addressed by Dr. James J. Walsh, New York, on "The Professional Spirit in the Middle Ages," and an invitation to be present is extended to the wives and friends of members. The pediatric section was addressed, December 6, by Dr. A. Graeme Mitchell, professor of pediatrics, University of Cincinnati College of Medicine, on "Is There a Correlation Between Middle Ear Disease and Gastro-enteritis"?

Another Institution for Feebleminded.—The state directors of welfare and public works have selected a site of more than 1,700 acres 4 miles west of Lebanon for the Institution for the Feebleminded in southwestern Ohio. The last general assembly appropriated more than $298,000 for lands and developments. The site near Lebanon was selected on condition that the state in drilling wells find the quantity and quality of water necessary. The land belongs to the Otterbein home, which is operated by the United Brethern Church as an orphanage and home for its aged. Ohio is also preparing to build an institution for the feebleminded in northeastern Ohio at Apple Creek.

Personal.—Dr. Asa C. Messenger has been appointed resident physician at the Ohio Soldiers and Sailors Orphans' Home, Xenia. Dr. Messenger served in that capacity formerly for eleven years and has been secretary of the medical staff of the home since the staff was instituted.——Dr. George M. Mason, Summerfield, has been appointed health commissioner of Noble County to succeed the late Dr. John L. Gray, Caldwell.—— Dr. Alfred Friedlander, professor of medicine, University of Cincinnati College of Medicine, addressed the New York Academy of Medicine, New York, November 23, on "Clinical Types of Hypotension."——Dr. William J. Klemm has been appointed city physician of Canton to succeed the late Dr. John A. Rhiel.

Society News.—The Eighth District Medical Society met at Nelsonville, November 1, with the Athens County Medical Society as host; Dr. Charles W. Stone, Cleveland, president of the state medical society, spoke on "The Modern Trend," and Dr. Albert Henry Freiberg, Cincinnati, president elect of the state medical society, "Educational Functions of the Medical Profession"; Dr. George W. Crile, Cleveland, discussed "Factors Which Control the End-Results of Operations on the Gallbladder and Thyroid Gland."——Dr. Louis Feid, Jr., Cincinnati, addressed the Clermont County Medical Society, Owensville, recently, on "Treatment of Malignancy."—— Dr. Milford E. Barnes, Greenville, health commissioner, Darke County, addressed the Miami County Medical Society, November 2, on "The Expanding Field of Preventive Medicine in Its Relation to Public Health and the Medical Profession."—— Dr. Gotthelf Carl Huber, University of Michigan Medical School, Ann Arbor, addressed the Montgomery County Medical Society, November 23.——The Toledo Academy of Medicine conducted a symposium on fractures, December 7, the speakers being Drs. John R. Davis, Barney J. Hein, Thomas H. Brown and Burt G. Chollett.

OREGON

Dr. Burroughs Fined Again.—Albert C. Burroughs, M.D., Portland, was convicted of practicing medicine without a license in September and was fined $250. He was the twenty-third unlicensed practitioner to have been convicted in the campaign being conducted by the state board of medical examiners against unlicensed practitioners (THE JOURNAL, Nov. 26, 1927).

Hospital News.—The new $1,000,000 veterans' bureau hospital in Sam Jackson Park, Portland, on Marquam Hill, near the University of Oregon Medical School, the Doernbecher Hospital and the County hospital, is expected to be occupied by patients by the first of the new year. The regional offices of the veterans' bureau moved into the administration building of the hospital about December 1. The hospital will be in charge of Dr. Paul I. Carter.

Society News.—The fifty-fifth annual meeting of the Oregon State Medical Society will be at La Grande, May 16-17, 1929. ——The Portland City and County Medical Society met, November 7; Dr. Homer P. Rush read a paper on "Hyperthyroidism and the Heart," and Dr. Thomas M. Joyce, on "Ulcer and Cancer of the Stomach."——Mrs. Charles Edwin Sears has been elected president of the women's auxiliary of the Portland City and County Medical Society, which held its first meeting, December 3, at the University Club.——Prof. F. d'Herelle, Yale University, New Haven, lectured at the University of Oregon Medical School, November 8, on the bacteriophage.——Dr. Lawrence Selling, Portland, addressed the November meeting of the Central Willamette Medical Society, Eugene, on "Changes in Our Views of Neuroses," and Dr. Clarence J. McCusker, Portland, gave an analysis of prenatal clinic cases.

PENNSYLVANIA

Hospital News.—Milton S. Hershey, chocolate manufacturer, plans, it is reported, to spend an additional $2,000,000 on the village which bears his name to provide a building, housing a hospital, library, theater and auditorium.

Society News.—The Washington County Medical Society, Washington, was addressed, December 12, by Drs. Laurrie D. Sargent on "Survey of the Practice of Medicine in England and France," and John B. McMurray, "Survey of Treatment of Eye, Ear, Nose and Throat Diseases in England and France."

Philadelphia

Professor d'Herelle Awarded Medal.—The William Wood Gerhard Medal of the Philadelphia Pathological Society was awarded to Prof. F. d'Herelle of Yale University, New Haven, Conn., for his studies on the bacteriophage, on which subject he addressed the society, December 13.

Captain Plummer Made Director of Graduate Hospital.—Capt. Ralph W. Plummer, medical corps, U. S. Navy, has been elected director of the Graduate Hospital of the University of Pennsylvania. He will serve in a supervisory capacity until released from active duty in the navy in 1929, and will then take full executive charge of the hospital, carrying on the work formerly divided between George H. Meeker, Sc.D., director of the hospital, and William W. McNeary, superintendent.

Personal.—Dr. Abraham J. Cohen has been appointed chief of the division of tuberculosis of the municipal bureau of health to succeed the late Dr. Thomas Mellor Tyson. Dr. Cohen has been medical director of the Eagleville (Pa.) Sanatorium for nineteen years and has served also as assistant director of the Henry Phipps Institute.——The Association of Former Resident Physicians of Lankenau Hospital formally presented to the hospital a painting of "Dr. John B. Deaver and his clinic."—— Dr. Herbert M. Goddard has been elected president for the ensuing year of the Medical Alumni Association of the Medico-Chirurgical College.

Symposium on Opium Addiction.—The Philadelphia Committee for the Clinical Study of Narcotic Addiction will present a symposium at the Philadelphia County Medical Society, Twenty-First and Spruce streets, December 19, on the chemical and clinical studies of opium addiction. Among the speakers will be Lafayette B. Mendel, Ph.D., Yale University, New Haven, Conn.; Dr. Menas S. Gregory, New York; Dr. George B. Wallace, New York; Carl F. Schmidt; A. E. Livingston; Dr. Oscar H. Plant, professor of pharmacology and materia medica, State University of Iowa College of Medicine, Iowa City; Dr. Arthur B. Light, and Mr. William A. Wolff. The chairman of the committee, Dr. Joseph C. Doane, will preside. Physicians are invited.

Society News.—The Philadelphia Urological Society was addressed, November 26, by Dr. Maurice Muschat on "Physiology of the Milking Muscle of the Human Kidney."——The section on medical history of the College of Physicians of Philadelphia was addressed, December 4, by Mr. H. W. Carson, London, England, on "Surgery During the Period 1770-1820," and by Dr. Charles W. Burr on "Dr. Robert Whytt and Internal Hydrocephalus."——The Philadelphia County Medical Society conducted a "special heart night," December 12, Drs. William S. Thayer, Baltimore, President of the American Medical Association, speaking on angina pectoris, and Harold E. B. Pardee, New York, on "Arteriosclerotic Heart Disease."——The Philadelphia Academy of Surgery was addressed, December 3, by Drs. Walter G. Elmer on remarks on surgical technic, and Selling Brill, "Intestinal Obstruction."——The Philadelphia Laryngological Society was addressed, December 4, by Dr. Anthony A. S. Giordano on "Ceanthus Americanus—A Study of Action on Coagulation Time in Normal Individuals"; there was a round table conference on the value of coagulation and bleeding time tests in otolaryngology.——The Philadelphia Roentgen Ray Society was addressed, December 6, by Dr. George Pillmore on "Technic of Gallbladder Examinations." ——Dr. George P. Pitkin, chief surgeon, Holy Name Hospital, Teaneck, N. J., addressed the Obstetrical Society of Philadelphia, December 6, on "Spinal Anesthesia in Obstetrics and Gynecology."——Dr. James M. Anders addressed the Association of College Presidents of Pennsylvania at Harrisburg, November 24, on the research method of teaching.——The Mutter lecture of the College of Physicians of Philadelphia for 1928 was delivered by Mr. Herbert Carson, Prince of Wales Hospital, London, on "Cancer of the Colon."——Dr. Joseph Colt Bloodgood was elected president of the Baltimore City Medical Society, December 7, at which meeting Dr. Thomas McCrae, Philadelphia, spoke on "The Organic Change and Disturbance of Function."

WASHINGTON

Injunction Requested Against County Commissioners. —The president of the King County Medical Society, Dr. David C. Hall, Seattle, instituted injunction proceedings, November 20, against the King County commissioners to prevent the letting of contracts for the new county hospital. It was declared that the commissioners are violating an agreement not to take any action in letting the contracts without first consulting the county medical society. The 6 per cent fee the commissioners have agreed to pay the architects is said to be $25,000 too high and the retention of architects before a complete survey is made will entail substantial loss to taxpayers.

Society News.—Dr. Frederick H. Brush, Yakima, president of the state medical society, addressed the Klickitat-Skamania Counties Medical Society, October 18, White Salmon, on function of the state society; Dr. Herbert E. Coe, Seattle, on "Causes of Mortality in Appendicitis in Children"; Dr. Brien T. King, Seattle, on toxic goiter, and Dr. James Marr Bisaillon, Portland, Ore., on mistakes in diagnosis of tuberculosis. The society assembled at the church for a dinner served by the ladies, and in the afternoon met with the White Salmon Women's Club, where Drs. King and Bisaillon again spoke on goiter and tuberculosis. The president of the society, Dr. Frank H. Collins, Goldendale, presided.——The Spokane County Medical Society was addressed, November 8, by Dr. George H. Anderson, Spokane, on "Congenital Heart Block," and by Dr. Russell Congdon, Wenatchee, on "Differential Points Between Heart Conditions in Toxic Goiters."——Dr. Marion Le Cocq, Lynden, addressed the Whatcom County Medical Society, Ferndale, November 5, on public health.——The second unit of the Virginia Mason Hospital, Seattle, was opened, November 1.

WEST VIRGINIA

Personal.—Dr. Charles E. Hutchinson has been appointed health commissioner of Moundsville.——Dr. Henry D. Hatfield, Huntington, was elected to the United States Senate at the November 6 election.

Society News.—Dr. Paul Titus, Pittsburgh, addressed the Ohio County Medical Society, Wheeling, November 9, on "Toxemia of Pregnancy," illustrated with motion pictures and lantern slides.——Dr. Paul R. Sieber, Pittsburgh, addressed the Monongalia County Medical Society, November 8, on "Acute Head Traumas."——Among others, Dr. Elbyrne G. Gill, Roanoke, Va., addressed the Raleigh County Medical Society at the home of Dr. and Mrs. Walter D. Simmons, Jr., Slab Fork, recently, on "Foreign Bodies in the Air and Food Passages," illustrated with lantern slides.——The Harrison County Medical Society was addressed at Clarksburg, November 1, by Dr. T. Thomas Judson McBee, Morgantown, on

"Cystitis."—The drive for $350,000 for the Wheeling Hospital, Wheeling, ended with a dinner, November 6, at which time more than $550,000 was reported subscribed. The dinner was attended by about 1,300 persons. The funds are for paying off obligations against the hospital for remodeling parts of the building and the purchase of new equipment.——Among others, Dr. Charles E. Holzer, Gallipolis, Ohio, addressed the third annual meeting of the Hospital Association of West Virginia, Charleston, December 3, on "A Budget System as Applied to a Small Hospital.——The Ohio County Medical Society, Wheeling, was addressed, November 23, by Dr. Gabriel Tucker, Philadelphia, on "Bronchoscopy in the Diagnosis and Treatment of Diseases of the Lungs."

GENERAL

News of Epidemics.——Eighty-five cases of smallpox had been reported in the district of Chicoutimi, Quebec, Canada, November 13.——Toledo, Ohio, reported eighty-one cases of chickenpox during the week ending November 9.——The schools of Ortonville, Mich., were recently closed for two weeks on account of mumps.——Smallpox was reported in the public schools of Fairfield, Iowa, November 15.——The primary school at New Windsor, Ill., was closed, November 20, on account of scarlet fever.——Public schools in Simsbury, Conn., were ordered closed, December 3, on account of scarlet fever. ——About 259 cases of measles were reported in Binghamton, N. Y., November 27.——Seventeen cases of diphtheria were reported in Joliet, Ill., and environs with two deaths, November 27.

Fifteen Thousand Cases of Influenza in a Week.—The U. S. Public Health Service reports that more than 15,000 cases of influenza were reported in the United States for the week of December 1. The greatest prevalence of the disease has been in California, where 8,213 cases were reported; Montana reported 3,272; South Carolina, 2,718; Oregon, 296, and Utah, 258. Reports, December 11, indicate that the epidemic had spread to many communities in the Middle West and South. The University of the South, Sewanee, Tenn., was reported closed temporarily, December 10, for this reason; the University of Missouri, Columbia, closed the same day; Culver Military Academy, Culver, Ind., declared an early vacation because of eighty-eight cases of influenza, while Madison, Shelby and Marion counties, Ind., were severely affected. The health officer of Waukesha, Wis., reported an epidemic; the school superintendent estimated that 10 per cent of the pupils were out of school on account of colds and influenza. Kansas, according to press reports, showed more than 13,000 cases developing during the week preceding December 10. Two schools in Quebec Province near Montreal, Canada, closed, December 10. The outbreak in Los Angeles appeared to be diminishing somewhat.

International Congress for Mental Hygiene.—There will be held in Washington, D. C., in May, 1930, the first International Congress of Mental Hygiene, according to an announcement made by the secretary of the National Committee for Mental Hygiene, Mr. Clifford W. Beers, who is said to be the founder of the mental hygiene movement. It is interesting to note that the movement was founded by one "who came back to a life of extraordinary usefulness after three years as a patient in various public and private institutions for the insane." Sufficient funds to guarantee the basic expenses of the first international congress on mental hygiene have been made available through the American Foundation for Mental Hygiene. Out of the congress is expected to come an international committee, whose headquarters will be in this country, which will act as a clearing house for information on all phases of mental hygiene and as the coordinating mechanism of the development of programs of study in this field in all countries. When the organizing committee of the international committee met in Paris last year, it was noted that a desire existed among European leaders of mental hygiene to attend the congress and study the methods which have been developed in this country. The New York annual meeting of the National Committee for Mental Hygiene was attended by about 400 physicians, psychologists, educators, social workers and lay persons. Dr. Charles P. Emerson, Indianapolis, was elected president for the ensuing year and Mr. Clifford W. Beers, secretary. The committee has headquarters at 370 Seventh Avenue, New York.

Medical Bills in Congress.—H. R. 14930, introduced by Representative Johnson of Washington, amends the World War Veterans' Act so that hospitalization of veterans of all wars suffering from disabilities of nonservice origin shall be mandatory. Under existing law hospitalization for such disabilities is provided if "existing government facilities permit." This bill also provides outpatient treatment to all veterans irrespective of the origin of the disability. H. R. 14154, introduced by Representative James, authorizes appropriations for the construction and installation at the Army Medical Center, District of Columbia, of certain buildings. S. 4638 is the companion bill in the Senate. S. 4708, introduced by Senator Bingham, amends the Emergency Officers Retirement Act by providing that any person who at the time of the passage of the act was rated by the veterans' bureau as being 30 per cent or more permanently disabled shall be entitled to the benefits accruing under the act to persons having not less than 30 per cent permanent disability incurred in line of duty if application therefor is received in the U. S. Veterans' Bureau within two years after May, 24, 1928. House Resolution 2553, requesting the secretary of the navy to detail a medical officer to the House of Representatives, has been agreed to by the House. H. R. 7209, providing for the care and treatment of naval patients on the active or retired list, and members of the naval reserve or marine corps reserve entitled to treatment in naval hospitals, in other than government hospitals when appropriate naval hospitals are not available, has passed the House.

Review of World Health Conditions.—In his annual report just submitted to Congress, Surg. Gen. Hugh S. Cumming, U. S. Public Health Service, states that health conditions were generally favorable throughout the world during the fiscal year 1928. No pandemic outbreak of disease occurred and no country with a modern health organization was affected by the spread of pestilences that in the past have scourged the world. India continues to be the world center of bubonic plague, but cases were reported in Russia, Greece, Ecuador, Argentina, South Africa, China, Algeria, Madagascar, Nigeria, Siam and French Indo-China. There were no cases in North America, except two in California which were contracted from the infection in ground squirrels. Cholera was more prevalent in India than it had been in eight years, except in 1924, and was present in several other parts of the world. Yellow fever reappeared in west Africa in June, 1928, and at Rio de Janeiro, Brazil, and several ports and places in the interior. Typhus fever occurred in Morocco late in 1927. The typhus situation in Europe continued to improve. The United States reported more cases of smallpox than any other country except India. There were nearly 34,000 cases of smallpox in this country in the calendar year 1927; there was a widespread outbreak of infantile paralysis in the summer of 1927, and nearly 4,000 deaths from measles in forty-one states in 1927. Whooping cough cost nearly 7,000 lives in forty-two states. An increase in pellagra was reported in the lower Mississippi Valley. The death rate from influenza and pneumonia was unusually low in the United States during the calendar year 1927. There was an increased prevalence of diphtheria, but the case rate had begun to drop toward the end of the present fiscal year. In protecting the United States from the importation of disease, the public health service inspected 21,631 vessels and millions of passengers and seamen. Seven cases of smallpox, one of leprosy and two of typhus fever reached the quarantine stations, where the patients were detained. The personnel of the public health service, which carries on many other health activities, consisted of 1,174 medical officers and other scientific workers, and 3,586 general and technical employees at the close of the first half of 1928.

CANADA

Health Survey of Montreal.—A group of citizens desirous of contributing to public welfare have financed a health survey of Montreal which, according to the *Canadian Medical Association Journal*, was the greatest work of its kind ever undertaken in Canada. The survey was entrusted to well known research men and a competent staff under the direction of Dr. Albert Grant Fleming. It covered a period of eight months. The Metropolitan Life Insurance Company volunteered later to print the report and distributed copies gratuitously.

Exhibition of the Canti Film.—Under the auspices of the Winnipeg Medical Association, the Canti Cancer Film was exhibited at Winnipeg, October 2, by Dr. James Miller, professor of pathology, Queens University Faculty of Medicine, Kingston. The film, it is said, has been presented to the Canadian Medical Association by Dr. Ronald G. Canti, London, England, who prepared it. Dr. Canti's film was exhibited also in Calgary, Alberta, by Dr. Miller; in addition to physicians, editors, lawyers, dentists, druggists, ministers, school teachers and nurses were invited. In three reels the film demonstrates the reproduction of normal cells in vitro and of cells from Jensen's rat sarcoma, and the effect of radium on these cells. It was well received by both audiences.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 17, 1928.

Great Improvement in the National Health

The annual report of the chief medical officer of the ministry of health, Sir George Newman, reviews all the efforts, curative and preventive, now being made against disease. The population in 1927 of England and Wales is given as 39,290,000. The population increased last year by about 200,000 persons. The principal facts concerning the physical life and health of the people in England and Wales during 1927 were as follows: The number of births was 654,172, giving a birth rate of 16.6, the lowest on record. The effect on the total population of this reduced number of births is compensated for by the substantial saving of child life. The number of deaths was 484,609, an increase of 30,805 over the previous year. The death rate was 12.3 per thousand persons. Of these deaths 36.4 per cent occurred in persons under 50 years of age. The infant mortality rate (the death rate of infants under 1 year per thousand born) was 70, the same rate as for 1926. This means that the country saved 37,800 babies' lives over and above the average annual saving obtained from 1901 to 1910. This figure of infant lives saved is a remarkable evidence of what can be done by effort directed to a particular problem within a single generation.

The following table shows the birth and death rates per thousand of population and the infant death rate per thousand births since 1871:

	Birth Rate	Death Rate	Infant Death Rate
1871-1880	35.4	21.4	149
1881-1890	32.4	19.1	142
1891-1900	29.9	18.2	153
1901-1910	27.2	15.4	128
1911-1920	21.8	14.3	100
1921	22.4	12.1	83
1922	20.4	12.8	77
1923	19.7	11.6	69
1924	18.8	12.2	75
1925	18.3	12.2	75
1926	17.8	11.6	70
1927	16.6	12.3	70

A second table shows the death rates per thousand deaths of the principal "killing diseases":

Killing Diseases	Rate per Thousand Deaths
1. Diseases of heart and circulation	201
2. Bronchitis, pneumonia and other respiratory diseases (influence of influenza is profound here)	157
3. Cancer	111
4. Diseases of nervous system	90
5. Tuberculosis	79

These five conditions are responsible for 64 per cent of the death rate. They, and not the pestilences of a former day, smallpox, typhus, typhoid, ague, plague or cholera, which as widespread national scourges have already been defeated, are the outstanding physical enemies.

The mortality of childbirth remains high. (There has been no improvement since 1894.) In 1927 2,690 women died in childbirth, and of these 1,026 died from puerperal fever. During the past year influenza, smallpox, cerebrospinal fever and typhoid increased in incidence, while the incidence of poliomyelitis and of epidemic encephalitis declined. No fewer than 14,767 cases of smallpox were notified, but only forty-nine deaths occurred from it. The disease has remained mild, except for the outbreaks at Hendon and Hackney, in which seven out of fourteen cases were fatal.

INOCULATION AGAINST DIPHTHERIA

Sir George Newman urges the importance of inoculation against diphtheria. As the inoculation has no effect for some months, early inoculation is advised. The material used is toxoid-antitoxin, which has proved both safe and effective. Scarlet fever antitoxin is also being increasingly used, and has proved effective in treatment. A prophylactic serum against measles was tested and found insufficiently effective.

The mortality from tuberculosis has fallen by 75 per cent since 1847, which Sir George terms "an astounding fall." With regard to nonpulmonary tuberculosis, the remarkable decline manifested in recent years still continues. The death rate from it in 1927 was 181 per million of population, as compared with 190 per million in 1926. The principle of sanatorium treatment is considered absolutely sound, though the system may be faulty. The critical issue is the effective intensive treatment of each patient. The mortality from tuberculosis of the lungs has declined, from 1847 to 1926, from 3,189 per million to 730 per million, an astounding fall of 75 per cent. The figures relating to venereal disease show that, last year, there was an increase of 3.7 per cent in the new cases of gonorrhea.

RADIUM IN CANCER

The figures relating to cancer are held not to prove that this disease in increasing. The necessity of employing radium continuously so that none of this precious substance may be wasted is urged. Radium can best be used in some center specially devoted to the purpose provided with an adequate amount of radium to allow of distribution among applicants in suitable amounts. The high cost of radium places such a center beyond the reach of most general hospitals, and the number of suitable patients attending an individual hospital is usually too small to enable the hospital to keep even a small quantity of radium in constant use.

Spahlinger Again

It is some time since a concerted attempt was made in the lay press to boost Spahlinger's "cure" for tuberculosis. To one newspaper, the *Daily Express*, is due the credit of exposing his pretensions. As reported previously (THE JOURNAL, March 5, 1927, p. 739) the *Daily Express* sent a special correspondent to Geneva to investigate. He found that a large income was derived from patients at the Spahlinger Institute and that there were many cases in which treatment failed, of which nothing was said in the roaring propaganda. Subsequently the *Daily Express* (THE JOURNAL, June 25, 1927, p. 2043) issued a challenge to Spahlinger when he was in London. It offered to pay $50,000 toward his work on condition that a committee of experts be permitted to examine it and report on it. Every effort to get in touch with him failed. The work of the *Daily Express* appeared to bring the Spahlinger propaganda to an end, for it stopped for a time. However, after a long silence, Spahlinger has bobbed up again and has published in Geneva a pamphlet of forty-seven pages denouncing the *Daily Express* for its revelations in regard to himself and his "cure" for consumption. These revelations showed that men and women were being lured to Switzerland by the hope of being freed from tuberculosis, and in many cases were spending the savings of a lifetime with no reward but disillusion and despair. The *Daily Express* says that it had not then, nor has now, any desire to discourage Spahlinger from pursuing his work, but asked him to fulfil the condition mentioned. But, as always, he still clings to secrecy, and in the pamphlet does not mention the offer made by the *Express*. This renewed activity seems to be explained by the announcement in London of the formation of a private company with a capital of $205,000. The *Daily Express* is able to reveal that the purpose of the

company is to develop and test a vaccine prepared by Spahlinger for the treatment of cattle. The company is registered as "Bovine Syndicate, Limited," and its objects as set out are: "To acquire by purchase or otherwise and either absolutely for a term or otherwise the right to use and to carry on the preparation, manufacture and sale of vaccines, serums, remedies, processes or prescriptions and similar preparations, whether secret, guarded or protected or otherwise, whether designed to relieve, prevent or cure suffering, disease and infirmities, or generally to improve the physical well being of any animals." The directors of the company as shown in the files are Major-General Sir Frederick Maurice, K.C.M.G., Sir Bruce Bruce-Porter, M.D., and Sir Thomas Watts, M.D., who is the conservative member of parliament for the Withington Divison of Manchester. It is noteworthy that Spahlinger's propaganda and financial activities seem to be confined to England, though he threatened in his last campaign to offer his "discovery" to America if he did not receive sufficient support. Both countries are, of course, happy hunting grounds for all sorts of irregular practitioners. His native Switzerland does not give him any support, financial or otherwise, and its medical authorities do not give him any countenance.

Sir Ronald Ross's Archives Sold

The desire of Sir Ronald Ross to sell the archives describing his discovery of the mosquito origin of malaria was reported in a previous letter (THE JOURNAL, November 17, p. 1560). They have now been bought for $10,000 by a wealthy English woman who is anxious to insure that they shall not be lost to the empire. What shall be done with them has not yet been decided. Sir Ronald, who is now 71, is recovering from a severe illness and anxious to make further provision for his children.

PARIS

(From Our Regular Correspondent)

Oct. 17, 1928.

The French Congress of Surgery

At this period of the year, one congress succeeds another in rapid succession. The most significant one in recent weeks is the French Congress of Surgery, which is in session all this week and is attracting a large attendance, from the city, the provinces and foreign countries. The present congress is the thirty-seventh meeting of the Association française de chirurgie and is presided over by Professor Gosset. Among the foreign members may be mentioned Archibald and de Martigny (Montreal), Chutro (Buenos Aires), Petrides (Alexandria), Serdjukoff (Moscow), Silberberg (Odessa), Krynski and Lesmonski (Warsaw), Juvara (Bucharest), Milianitch (Belgrade), Phocas (Athens), Reynaldo de Paolo (Lisbon), and many Swiss, Belgian, Italian and Spanish surgeons. The introductory address of the president caused quite a sensation. He recommended to his colleagues a better organization of the surgical services by the introduction of the collective or group system. Such an organization became necessary during the war in the large overcrowded surgical centers. M. Gosset mentioned that he had seen it work remarkably well, and in a permanent way, at the Mayo Clinic in Rochester, Minn., and he cited that institution as an example for the surgery of the future. The surgeon can no longer be an isolated operator and do everything himself. He should have at his side, in addition to the ordinary surgical assistants, a professional anesthetist, a radiologist, an anatomopathologist for the immediate examination of histologic specimens during the course of the operation itself, a physician and a pathologist for the complete preliminary examination of the patient, and a specialist in hematology and blood transfusion. At the present time, such an ideal can be attained in France only in certain centers in the large cities. But M. Gosset advised likewise the surgeons in cities of the second rank to unite and to combine their resources in a common enterprise, so as to be able to establish such centers, which he was convinced would be of benefit to the patients as well as to the progress of the art. It must be admitted that the idea of such association, with the resulting submersion of individual personality, was not to the liking of all the surgeons present. However, there are already such groups functioning successfully at Havre and at Cannes.

There were three main topics on the program. The first was: "Remote Results of Surgical Treatment of Duodenal Ulcer." Two important papers on this subject were presented by Professor Delore of Lyons and Dr. Okinczyc of Paris, respectively. The first was on the surgical and technical order. After reviewing the various procedures recommended and giving the statistics for each, he declared that exclusion of the pylorus should be abandoned, as it impairs the prognosis of gastro-enterostomy, which, in itself, affords from 70 to 80 per cent of permanent recoveries. Furthermore, the operation is not at all difficult. However, it allows the ulcer to persist, the future of which is uncertain. From this standpoint, partial gastrectomy is preferable, while gastro-enterostomy may be the starting point of new disorders. Delore suggests that one may perform a provisional gastro-enterostomy and hold oneself in readiness to perform later, if necessary, a partial gastrectomy, with excision of the ulcer. On the whole, however, he is inclined rather to a wide gastroduodenal resection. M. Okinczyc, in his paper, treated the subject from a different angle, and advanced, in the beginning, the principle that an ulcerous condition constitutes a general disorder and results from defective physiologic states that permit autodigestion of the mucosa in either the stomach or the duodenum. In that case, all the interventions would be only palliative and inspired by the circumstances of each individual case. Resection and gastro-enterostomy give essentially the same percentage of recoveries. The important thing is that the operation, whichever it may be, shall always be performed early—as soon as the diagnosis is suspected. The longer one waits, the deeper the inflammation affects the wall, giving rise to adhesions, and rendering the operation more hazardous. The discussion that followed, in which, among others, Gambesini (Bologna), Julliard (Geneva), Dziembowski (Poland), de Moor (Brussells), Podlaha (Czechoslovakia), Delagénière (le Mans), Bérard (Lyons), Pauchet (Paris), Leriche (Strasbourg), de Martel (Paris), and Gosset (Paris) took part, led to the same conclusions that Okinczyc had presented. On the same subject, special communications and statistics were introduced by MM. Guyot (Bordeaux), Lardennois (Reims), Lambert (Lille), Lapeyra (Tours), Abadie (Oran), de Martel (Paris), and others.

On the second topic, "Present Status of Spinal Anesthesia," the main papers had been prepared by Professor Forgue of Montpellier and Dr. Basset of Paris, respectively. Professor Forgue confined his investigations chiefly to the physiologic phenomena that accompany this form of anesthesia. In conclusion, he stated that the field of spinal anesthesia should not be extended too far. The hazards always associated with anesthesia of this nature are reduced to a minimum by a technic that has been worked out in the minutest details. This paper constituted a most complete survey of this controversial question. The mortality figure that the author derived from the study of seventy-five different series of statistics is 0.08 per cent, or less than 1 per thousand. It is astonishing what a great difference there is between the results secured by different operators using the same anesthetic. With stovaine and procaine the results may differ as 1 to 2; that is to say, with one operator the mortality may be twice what it is with another. Possibly the fact that procaine is regarded as harmless has caused some to increase the normal dosage. It is more prudent, therefore, not to extend the domain of spinal anesthesia too far,

but to reserve it for anesthesia of the abdomen and of the lower limbs. The chief contraindication to its use is low blood pressure.

The discussion that followed betrayed wide differences of opinion. Advocates and opponents of spinal anesthesia presented contradictory statistics: Tanasesco (Jassy), Krynski (Warsaw), Phocas (Athens), Daniel (Bucharest), Danis and Mayer (Brussels), de Rouville (Montpellier), Villard and Patel (Lyons), Rocher (Bordeaux) and Leriche (Strasbourg). Prof. Jean Louis Faure and Professor Brindeau gave as their frank opinion that they preferred general anesthesia with combined anesthetics, a good inhalation apparatus and an experienced anesthetist.

The third question, "Remote Results of Cranial Trephination for Traumatic Lesions," was presented by MM. Alajouanine, Maisonnet and Petit-Dutaillis. They discussed, successively, the mortality in trephination operations, the sequelae of cranial traumatisms, tardy infectious complications, the evolution of the sequelae according to the seat and the importance of the lesions, cranioplasty and dural autoplasty, and, finally, the future social and economic life of persons who have undergone trephination operations. In these studies five essential ideas may be emphasized: the idea of shock lesions in addition to the primary trauma, discoverable by frequently repeated examinations; the idea of the nature of the wound (the grave sequelae, especially epilepsy, are more to be feared in traumatisms involving the dura mater than in those that are confined to the skull proper); the idea of the presence of a projectile, which does not modify the prognosis, except for a greater probability of tardy suppuration; the idea of infection, which is of capital importance as regards both the immediate and the remote results; and, finally, the idea of the slowness of the later evolution of organic processes of the brain. A person who has undergone a trephination operation is always subject to the development of any later manifestation—even epilepsy or cerebral abscess.

In the matter of infection, unquestionable progress has been made. The relative size of the wound is of little importance. There is possibly less risk of remote developments in large wounds. Epilepsy has become more rare through the greater skill acquired in the manipulation of cerebral tissues. De Martel's method (lavage with warm serum, followed by aspiration) is excellent. It is often better to leave foreign bodies in situ than to remove them by destructive maneuvers. Nevertheless, it is the opinion of the authors that in case of a hematoma under the dura mater, the latter being intact, it is better to incise it, if the intervention is made during the first few hours. In the discussion, among others, MM. Gamberini (Bologna), Delagénière (Mans), Mencière (Reims), de Martel (Paris) and Rocher (Bordeaux) took part, all of whom confirmed the conclusions advanced in the papers presented.

Numerous communications on freely chosen topics occupied the remaining time of the congress. Among the more important may be mentioned those of Dr. de Martel on the surgery of tumors of the spinal cord, in France, from 1910 to 1928; Dr. Calot of Berck, on the diagnosis of hip disease in the child; Dr. Walther, on the resection of the superior hypogastric plexus in the treatment of pelvic neuralgia, and Dr. Milianitch of Belgrade on the treatment of ascites.

The exhibit of instruments and surgical material, which is a regular feature of the annual congress, assumed larger proportions than usual, owing to the participation of many foreign firms. Though commonly confined to the corridors of the Faculté de médecine, this year it extended into the vast *cour d'honneur*, where large temporary booths had been constructed.

Other congresses being held this week and next are: the thirteenth Congress of Legal Medicine, the fifteenth Congress of Hygiene, the National Congress of Social Hygiene at Besançon, the sixth Congress of Stomatology, and the Association professionnelle internationale des médecins.

TURKEY

(From Our Regular Correspondent)

Nov. 10, 1928.

Law Pertaining to the Control and Prevention of Syphilis

In February, 1921, a considerable increase in syphilis during and after the World War led to a bill pertaining to the control and prevention of syphilis, which was accepted by the great national assembly. According to this law a person with syphilis has the right to be treated by a physician of his own choice but is under obligation to carry a treatment card on which the kind and period of treatment are stated. All physicians are obliged to report their syphilitic patients by giving their names and occupations within twenty-four hours to the government or municipal physician. Physicians must furthermore inform the health department if persons are irregular in treatment or fail to appear for reexamination as required or if, by reason of their personal relations or their occupation, there is danger of exposing others to infection. Physicians are required to supply their syphilitic patients with an official leaflet containing information in regard to the nature and spread of the disease. This leaflet has to bear the signature of the physician. Marriage health certificates are issued according to regulations fixed by the provincial local health board. At government institutions or other official agencies, gratuitous treatment is provided. Persons disregarding their legal obligation to seek treatment are fined from 10 to 50 pounds. A syphilitic person knowingly infecting others shall be sentenced to prison for from six months to two years or pay a fine of from 100 to 500 pounds to the injured party. If infection occurs between married persons, the maximum fine shall be payed though action shall be taken only on demand of the injured party. If a physician is found guilty of an act of fraudulence in connection with this law and its regulations, he shall be punished by a prison sentence of from three months to two years and be temporarily suspended from office. Quacks undertaking the treatment of syphilitic persons shall pay a fine of from 50 to 100 pounds or be sentenced to prison for from two months to two years.

The regulations fixed by the ministry of hygiene in regard to this law are the following:

Marriage licenses shall in the future be issued only on presentation of a marriage health certificate by both parties. The marriage health certificate can be secured from a government or private physician. It is necessary that the private physician have his signature registered at the local health department to make the certificate valid. The local government physician or the director of the local health department is to investigate all marriage health certificates to ascertain whether one of the marriage candidates is not on the list of reported syphilitic cases. A marriage health certificate not showing the signature of the local health department is not valid. An examination for a marriage health certificate, if done by a government physician and at a government institution, is free of charge. All marriage health certificates issued by private physicians are to be sent to the local health department for investigation. Physicians not complying with this regulation are liable to be fined. All male candidates for a marriage health certificate are to be given a thorough physical examination. All female candidates shall have the hands, throat and mouth examined. Questionable cases call for a consultation of several physicians. All candidates have to present a birth certificate, without which no examination shall be made and no certificate given. Candidates presenting some one else's birth certificate or otherwise deceiving the physician are liable to fine and penalty. Persons found suffering from syphilis shall undergo treatment according to the syphilitic treatment regulations of the ministry of hygiene. There is no charge for such treatment, at the successful termination of which a marriage license is granted.

V 9
192

Persons found suffering from other diseases, such as tuberculosis or leprosy, shall be advised as to suitable treatment and postponement of marriage. The enforcement of these regulations shall be the responsibility of the respective governors of the provinces.

Latin Characters in School of Medicine

With the beginning of the first semester of this school year the Latin letters are to replace the beautiful but inconvenient Arabic script at the Constantinople university and all other Turkish institutions of learning. For this reason a few weeks will have to be given up entirely to the study of orthography, which changes by the adoption of the Latin characters. The committee on the language question has been at work for some time and has made important decisions. The language will henceforth be written exactly as it is spoken. Heretofore in the written language few vowels have been used. The spelling will be made as simple as possible and according to how the words are pronounced in Stamboul, the purely Turkish section of the city of Constantinople, where the best Turkish is spoken. A separate committee is responsible for the teaching of the reading and writing of the language in the new characters, with especial emphasis on illiterates. It is hoped that through this measure illiteracy may become a thing of the past. All government and other printing offices are busy at work resetting their machines, as with the probable promulgation of the language law in December all publications will have to be in Latin characters and the public schools will have to avail themselves of the new textbooks exclusively. The publication of books on scientific subjects requiring extensive preparation will be referred to a later date, although for scientific articles and in the lecture rooms the professors and students of the different departments of the university are to use the Latin characters. This will be a considerable inconvenience at first, but the importance of the departure from the old Arabic script is appreciated by all.

The ministry of hygiene has been using the Latin characters in correspondence and announcements since October, and will probably use them in its monthly magazine with the beginning of the new year.

ITALY

(From Our Regular Correspondent)

Oct. 15, 1928.

The Congress of Hygiene

The sixth National Congress of Hygiene was held in Fiume under the chairmanship of Prof. Achille Sclavo, director of the Istituto d'Igiene of the University of Siena. Professor Sclavo delivered the introductory address, in which he gave an account of the activities of the association during the past year, which culminated in an agreement with the medical directors with regard to the dissemination of hygienic propaganda. He discussed also the problem of the technical training of medical hygienists. The work of the various chapters of the society was recounted by the respective chairmen. The work accomplished in Rome, Bologna and Naples was of particular interest. Dr. Vincenzo Spagnuolo, the health commissioner of Fiume, presented the official topic "The Water Supply of Fiume." The speaker affirmed that not all waters of the adjacent Carso region required purification. Each case must be studied separately, account being taken of the hydrogeologic conditions in the several regions and a systematic chemical and bacteriologic examination of the waters carried out. Germ-laden waters must be filtered and sterilized. Waters that are turbid, though harmless from a bacteriologic point of view, must be clarified by a sedimentation or coagulation process and successive filtration. Professor De Lengyel, speaking on the same subject, gave a chemicobiologic study on the sources of the Zvir, which furnishes the water supply for the city of Fiume. With reference to the same waters, Dr. Spetz Quarnari discussed the bacteriologic conditions that he had found and the purification measures adopted.

Professor Casagrandi, hygienist of Padua, announced the forthcoming construction of a water system to supply water for all of Istria.

The second topic, "The Prophylaxis of Typhoid," was developed by Professor De Blasi. The speaker distinguished a technical prophylaxis, consisting in the application of hygienic measures to the cities and rural districts, together with emphasis on greater public vigilance, and an extratechnical prophylaxis based on the cooperation of hygienists, physicians in general, and the population to be protected. Uncooked green food is of almost no importance as a vehicle of infection, while sea-food is a very limited source of infection. Milk and water are of varying importance during the "typhoid season," which in most regions includes the summer and autumn, and likewise in "out-of-season typhoid." In out-of-season typhoid the outbreaks are due to water, while the circumscribed foci are due to milk. The chief source of contagion, however, is always contact with typhoid patients and convalescents. Healthy germ carriers constitute the chief menace in cases developing during the typhoid season. The ne plus ultra of antityphoid prophylaxis would be the isolation of patients and convalescents for three months after recovery from the disease and the isolation of chronic carriers. That, however, is practically impossible. It is necessary, nevertheless, to promote a publicity campaign for the attainment of other hygienicoprophylactic measures, such as scrupulous cleanliness, especially of the hands, and the eradication of flies. Preventive vaccination offers certain advantages.

Professor Tonzig presented the official paper on the third topic, "Physical Education in the Schools," in which he emphasized the need of studying carefully the individual types among the pupils, in order not to exacerbate constitutional weaknesses but to bring the pupil up to the normal or standard type. Appropriate gymnastics is the completion of physical education.

In the discussion that followed the presentation of this topic, Professors Sclavo, Zannelli and Di Nola took part. Di Nola, who is director of the Servizio sanitario della aereonautica, stressed the harm sometimes inflicted on young men through excessive indulgence in sport activities. He had observed with respect to the examinations for air pilots that a large percentage of applicants are eliminated by reason of cardiac defects traceable to such overindulgence.

Dr. Francioni developed the last topic on the program, "Social Diseases in Italy and the Preventive Work of Recent Years." The speaker emphasized that, in spite of the gratifying decline of general mortality, the problems of malaria, cancer, mental diseases, alcoholism, and tuberculosis remain still unsolved. For the prevention of malaria, in 1927 eleven new enterprises were begun, entailing an expenditure of 5,000,000 liras ($262,000). There are now twenty-two antitrachoma ambulatoriums, in which, during the past year, 260,000 consultations were given. Five homes for convalescents and two colonies for the reeducation of improved tuberculous patients dismissed from the sanatorium have been established. For some months past, the law providing for compulsory insurance against tuberculosis has been in force, and will soon be followed by the law providing for general insurance against all diseases. The city of Siena was chosen as the place of meeting of the next congress.

Commission for the Study of Dengue

For the purpose of studying at close range the manifestations and the course of the epidemic of dengue fever in Greece, the Italian government, in accordance with an understanding with the government of Greece, has sent a scientific expedition to Athens. The commission is composed of the following members: Professor Gabbi, director of the Clinica Medica in

Parma; Professor Neri, hygienist, of Naples; Professor Pontano, Dr. Russo, and a preparator of the bacteriologic laboratory of the Sanità pubblica, who is an expert in the capturing of mosquitoes.

The Ophthalmologic Hospital of the Province of Rome

Prof. Romeo Roselli, director of the Ospedale Oftalmico for the poor, of the province of Rome, has published an account of the work of the institution during the period from 1925 to 1927. The total number of patients treated was 10,256, of whom 983 were admitted to the hospital, while 1,110 operative interventions were performed. To the institution is entrusted also the campaign against trachoma, which involves the treatment of about 9,300 patients each year.

BERLIN

(From Our Regular Correspondent)

Nov. 3, 1928.

Care of the Blind in Germany

According to the statistics of 1871, there were 8.8 blind persons per 10,000 population in Germany. In 1900, the number had been reduced to 6.1 per 10,000. According to the preliminary report on the results of the federal census of the infirm, there were, in 1925, only 5.8 blind persons per 10,000 inhabitants. It appears, therefore, that during the fifty-four year period there has been a steady reduction of blind persons.

From an article by Dr. Frey, director in the federal health service, it appears that the care of the blind is shared by four different agencies: the federal government, the several states composing the *reich*, the communes, and voluntary charity. The federal law of 1923 pertaining to the employment of infirm or severely injured persons afforded many blind persons an opportunity of obtaining employment in the trades or industrial professions. Likewise, the federal insurance laws give a definite basis for the aid to be accorded those who carry compulsory insurance, in case they become blind through disease or accident. The Bürgerliches Gesetzbuch provides for aid in certain other cases. The federal insurance bureau (Reichsversicherungsamt) has granted permission to employ blind persons in industrial plants, provided, in the judgment of the state inspector and the technical inspector for the industrial union in question, there are no special dangers to which the blind would be exposed.

Since 1924 the care of infirm persons in need of assistance has been regulated by the "Reichsverordnung über die Fürsorgepflicht." The blind come under the application of this decree. The care of the infirm devolves on the "fürsorgeverbände" (special care-taking leagues), which are public bodies with a legal status. In regard to minors, the necessary legal provisions had been made by the federal juvenile welfare law of 1922. Of the 2,700 war-blinded persons, 66 per cent have been absorbed by new occupations, while about 13 per cent have been able to retain their old employment. A large portion of the war-blinded receive wages that approximate those of workmen who are in full possession of their senses. In addition to the ordinary general aid, federal care of the blind provides also reduced postal rates for the transportation of the important books and writings for the blind, which are of a bulky nature, and likewise reductions in railway fares for the war-blinded.

In the several states of Germany, the same regulations have been adopted with reference to the education of blind children that have long been in force with regard to deafmutes (in Prussia, the law of 1911, and, in general, by the law of 1900 pertaining to the education of the infirm). That applies particularly to education in institutions for the blind. In the states of Germany, there were, in 1926, twenty-five institutions for the blind with a total of 2,490 pupils. Seven of the institutions belonged to the central government, ten were communal, and eight were of a private character. Some of the specially trained instructors are blind themselves. In the institutions the blind learn reading and writing of the braille point system, which may be used also for musical notation, and receive an education (for example, also in orthopedic gymnastics) equal to that received by those who have complete vision. At the same time, they have manual training and learn various trades, and, in consequence of the excellent methods employed, the results are good. There are more than a hundred special lines of work in which the blind may find lucrative employment: chair and basket weaving, stone working, manufacture of china ware, steel-pen industry, button making, watch making; manufacture of brushes, electric lamps, tools, soap, textiles, paper, paper boxes, confections, and chocolate; the tobacco industry, shoemaking, and many others. In addition to the schools for the blind, Prussia acquired, in 1926, eight (and Hamburg one) special schools for pupils with subnormal vision; the separation of these schools from the schools for the blind is of fundamental importance. The institute for the deaf, dumb and blind in Nowawes, near Potsdam, is devoting itself with good success to the training of these unfortunates.

Likewise, voluntary charitable organizations do a great deal in aiding the blind. The many societies and leagues scattered throughout the *reich* have formed a federation, the so-called Blindenwohlfahrtskammer, with its headquarters in Berlin, which will also render aid in the preparing of laws pertaining to the blind, in the collection of statistics, and in the issuance of professional opinions on matters presented by the authorities. The societies also aid the blind in procuring admission to institutions and in obtaining employment. The meetings arranged for by these societies, aided by the teachers of the blind, together with the publications of the societies, are of extraordinary value in promoting the aid of the blind. The Deutscher Verein für Sanitätshunde supplies dogs that serve as guides to the blind.

Finally, numerous organizations of the blind have been founded, and have united to form a league, the Reichsdeutscher Blindenverband, with headquarters at Berlin SW., Belle-Alliance-Strasse 33. This league collaborates with the Deutscher Blindenlehrerverein and with the public and private centers that devote themselves to the care of the blind. The league controls four homes for convalescents and a training school for persons who have lost their sight in later life. It holds conventions and publishes the organ of the league, *Die Blindenwelt*. Several large libraries (Hamburg, Leipzig, Breslau, Marburg, and others) lend works for the blind. Those in need of assistance receive helpful information from the aforementioned centers. The large societies composed of blind persons all have their special journals, which supply their readers with information concerning all happenings affecting the blind in Germany and likewise in foreign countries. Of these, *Die Blindenwelt* is the most important. The league has its own publishing house, and publishes also a literary journal, *Die Gegenwart*, and several occupational journals, *Das Blindenhandwerk*, *Der blinde Musiker*, and *Die blinde Handarbeiterin*. The last mentioned journal, and also *Die Frauenwelt*, contain instructions for persons interested in knitting and crochet work; likewise cooking recipes and other information valuable to housekeepers. The need for religious instruction is supplied by a number of periodicals. There is a league of blind intellectuals, with its own special publication, *Beiträge zum Blindenbildungswesen*, which has a supplement on art and science, *Umschau in Kunst und Wissenschaft;* also a supplement for chess players, and scientific supplements in various special fields. In Berlin and Vienna some of the journals have a special literary section.

France and England have developed excellent special journals for the blind. More recently Italy and Spain have followed suit. An Italian publishing house for the blind puts out a journal in five languages, of which Esperanto is one. The

blind Esperantists also have their own publication. Holland and Japan have journals for the blind, and one has recently been launched in Argentina. For some time Russia has had special periodicals for the blind, and Poland is now endeavoring to found one. The *Daily Mail*, an English publication, sought recently, by introducing a cheaper method of printing for the blind, to provide them with a daily journal, but it did not prove a success, owing to the mechanical difficulties. In printing books and journals for the blind one of two methods is used. Either metal plates are stamped with raised letters from which copies are made, or the matter is set up with special type with raised points. Both methods are too expensive to permit of the publication of a daily newspaper. A few years ago, a publishing house in Vienna tried out a new method, endeavoring, by casting a form composed of a special mineral compound, to produce a more rapid and cheaper multiplication of copies of writing for the blind, but the method did not prove feasible. More recently, an attempt was made to publish a weekly newspaper in southwestern Germany, and it appears that it may succeed, if it obtains the necessary patronage. Some cities have of late published their radio programs in the point system for the benefit of the blind. An endeavor has been made to have the entire program of the German radio society published for the blind, but this has not yet been accomplished.

Vital Statistics for Bavaria

According to the preliminary compilations of the Bavarian bureau of statistics, the recorded marriages, births and deaths in the first and second quarter of 1928 are as follows: In the first quarter of 1928 there were 13,463 marriages, as contrasted with 10,708 for the corresponding quarter of 1913. During the same period there were 26,356 deaths. The excess of births over deaths for the first quarter of 1928 was 15,131, as against 11,185 for the first quarter of 1927 and 18,218 for the corresponding period of 1913. In the second quarter of 1928 there were 18,817 marriages and 26,178 deaths. The excess of births over deaths was 14,132 as compared with 19,058 for the second quarter of 1913. The total number of births for the first quarter of 1928 was 41,487; for the second quarter, 40,310. The marked increase in the marriage rate—vastly exceeding the prewar record—is accompanied, therefore, by only a slight increase in the number of births, and such increase as there is, is nullified by the greater mortality.

BUCHAREST

(From Our Regular Correspondent)

Nov. 15, 1928,

Stenosis of the Left Pulmonary Artery

At a recent meeting of the Bucharest Medical Society a patient was exhibited with all the symptoms of the uncommon disease stenosis of the left pulmonary artery. A barber, aged 34, was taken ill in December, 1927, with inflammation in the left side, involving the diaphragm and the lower part of the lung, evidently of a tuberculous nature. Examination at the meeting revealed marked shrinkage in the left side of the chest, and a dull percussion note over the entire surface. The heart was displaced two fingerbreadths to the left; the apex beat was strong and was a fingerbreadth outside the left mammary line. A systolic murmur was distinctly heard both in front and behind the left interscapular space, and the second sound was markedly accentuated. The systolic blood pressure was 110 mm. of mercury. There was no positive venous pulse noticeable and no dilatation of the heart. Examination of the sputum revealed tubercle bacilli. Roentgen examination confirmed the diagnosis of displacement of the heart and revealed a disease condition in the left chest that resembled an indurated pleuritis. The localization of the loud systolic murmur and the absence of the usual phenomena were in favor of a mitral or tricuspid insufficiency. Against the possibility of aortic stenosis, aneurysm or a mediastinal tumor was the condition of the pulse, the appearance of the diaphragm and general percussion. The symptoms generally confirmed the diagnosis that a stenosis existed in the left pulmonary artery.

Accidental Mercurial Poisoning

Dr. Joan Crutescu classifies the accidental forms of hydrargyrism into those following an obvious error in dosage and those resulting from absorption of legitimate doses or applications. Setting aside the first group of cases, which are rare, it must happen to every house surgeon to have administered 0.2 Gm. of mild mercurous chloride on admission to a patient suffering from an organic heart disease, with good effect, and, in a similar case, to have seen severe symptoms of mercurial poisoning ensue after a similar dose. This susceptibility to mercury is a clinical fact that is often overlooked, especially in the ordinary routine treatment of syphilis. The sudden appearance of a severe stomatitis in syphilis is a warning that cannot be neglected. A troublesome local irritation by the drug is sometimes seen in the vicinity of wounds which have been dressed with mercuric cyanide gauze (now seldom used), or after the application of a mercurial ointment, in the form of a pustular eruption that may prove intractable. In the field of obstetrics, corrosive mercuric chloride is a valuable and trustworthy germicide, but it is well known that it is more dangerous to employ it as a douche after delivery than before, as the almost inevitable lacerations provide greater facilities for absorption.

Temperance Reform in Roumania

Every one who knows anything of social life among the peasants of Roumania and chiefly of Transylvania, its biggest province, knows that much of the drunkenness, which in some parts of the country is still such a blot on their morality, is due not so much to love of intoxicating liquor as to a feeling of hospitality and good comradeship. The majority of Roumanian peasants are not only sober but actually abstinent for six days of the week, but on market and fair days and holidays it is the custom when neighbors meet to show their friendship by drinking together. This social custom has the force of long tradition behind it, and the Roumanian peasant is proverbially conservative of social tradition. The effects of this weekly or fortnightly debauch are not only disastrous morally and economically but deleterious physically. Plum brandy, corn brandy and the different fruit brandies (cherry, pear and apricot) are the drinks usually demanded, and the corn brandy supplied to the lower class peasants is of the vilest sort. For the last few years a movement, supported by the medical profession, has endeavored to check the custom by pledging intelligent peasants against "treating" in drink shops. A recent report issued by the leaders of the movement has borne witness to the good work the movement is performing.

Treatment of Exudative Diathesis with Irradiation of the Thymus

In a recent lecture, Dr. Leontinu said that the exudative diathesis stands in close connection with status thymicolymphaticus. From this it follows that in order to cure the exudative diathesis we ought to turn our attention to the treatment of the thymus gland as emphasized by Dr. J. Jenö Vas of Budapest. In a recent paper he reported that the majority of exudative cases presented an increased thymus shadow on the roentgenogram. Leontinu applied deep irradiations in twenty-five children suffering from the exudative diathesis or its skin manifestations of eczema, prurigo and urticaria pigmentosa. From the results obtained he recommends this method of treatment chiefly in cases in which the exudations do not yield to the usual external treatment. According to his opinion the irradiation checks the activity of the thymus, and the decrease of its function produces a loss of alkali in the organism which brings about an improvement in the exudations.

Marriages

VALENTINE LAWRENCE PUIG, JR., Laredo, Texas, to Miss Sarah Louise Payne of Esmont, Va., in Providence, R. I., October 6.

JACQUES HENRY BAUMHAUER, JR., Mobile, Ala., to Miss Janet Westgate Beebower, at Chester, Pa., October 12.

THOMAS RICHMOND BOGGS, Baltimore, to Miss Kate Newell Doggett, at Fredericksburg, Va., November 13.

WALLACE POLK SHEELY, Gulfport, Miss., to Miss Regina Hairston Flournoy of Columbus, November 8.

GASPARE VESE to Miss Marie Cerabino, both of Brooklyn, November 21.

WILLIAM H. LEE, Plain City, Ohio, to Miss Edith Dellinger, August 29.

Deaths

Alexander A. Maximow, professor of anatomy, University of Chicago, aged 54, was found dead in bed, December 4, of coronary sclerosis and myocarditis. Dr. Maximow was born in St. Petersburg, Russia, in 1874, and received his M.D. degree from the Imperial Military Academy of Medicine in that city in 1899. From 1903 to 1922, he was professor of histology and embryology at his alma mater, and from 1918 to 1922 was a member of the faculty of the University of St. Petersburg. He was a member of the aristocracy of Russia and held the rank of actual state councilor in the imperial army, 1896-1917. In 1922 he left Russia with his wife and sister, and came to the United States, since when he has been at the University of Chicago. Dr. Maximow was the author of a textbook on histology and of about seventy articles on histology and embryology in English, Russian and German, and was an authority on blood and connective tissue. He emphasized the functional approach to anatomy, and much of his research was done on living tissue. He was a member of the American Association of Anatomists, the American Association of Pathologists and Bacteriologists and the American Association for Experimental Pathology, and was able to speak a number of languages. In his death the profession has lost a great investigator.

Joseph McDowell Mathews, Los Angeles; University of Louisville (Ky.) School of Medicine, 1867; Vice President in 1897, President in 1899, and for six years Trustee of the American Medical Association; member of the American Proctologic Society; formerly professor of surgery, Louisville Hospital College of Medicine; past president of the Kentucky State Board of Health and the Mississippi Valley Medical Association; author of "Treatise on Diseases of Rectum, Anus and Sigmoid Flexure," and "How to Succeed in the Practice of Medicine"; aged 81; died, December 2, of pneumonia.

John Caldwell Yates ✠ San Diego, Calif.; Rush Medical College, Chicago, 1897; member of the House of Delegates of the American Medical Association in 1924; past president of the California State Medical Association and the San Diego County Medical Society; formerly member of the California State Board of Medical Examiners; aged 54; died, November 2, at his home in Coronado.

Theodore Blanchard Warner, New York; University of Maryland School of Medicine and the College of Physicians and Surgeons, Baltimore, 1915; member of the Medical Society of the State of New York; served during the World War; aged 40; died, November 12, at the Benedictine Hospital, Kingston, of injuries received in an automobile accident.

Henry Demarest Lloyd Stewart, Klamath Falls, Ore.; Chicago College of Medicine and Surgery, 1915; past president and secretary of the Klamath and Lake County Medical Society; served during the World War; aged 37; died, October 24, at the Klamath Valley Hospital, as the result of a gunshot wound received while cleaning his gun.

Frank John Sullivan, Columbus, Ohio; Starling-Ohio Medical College, Columbus, 1913; member of the Ohio State Medical Association, and the Associated Anesthetists of the United States and Canada; aged 39; on the staff of the Mount Carmel Hospital, where he died, November 19, of cirrhosis of the liver.

Patrick Joseph McKenzie ✠ Captain, M. C., U. S. Army, Washington, D. C.; University of Vermont College of Medicine, 1905; served during the World War; entered the regular army as a captain in 1920; aged 47; died, May 17, at the Walter Reed General Hospital, of glioma of the left parietal lobe of the brain.

Daniel M. Taylor ✠ Edwards, N. Y.; Jefferson Medical College of Philadelphia, 1884; health officer of the consolidated health district composed of the town and village of Edwards; aged 67; died, November 8, at the Hepburn Hospital, Ogdensburg, following an operation.

Charles William Bryson ✠ Los Angeles; College of Physicians and Surgeons, Keokuk, Iowa, 1882; formerly dean, and professor of gynecology, abdominal and clinical surgery, College of Physicians and Surgeons, Los Angeles; aged 62; died recently, of heart disease.

Ellsworth Frank Ross, Harlowton, Mont.; University of Vermont College of Medicine, Burlington, 1895; member of the Medical Association of Montana; served during the World War; county health officer; aged 63; died, November 12, of carcinoma of the stomach.

David Smalley Coles, Wakefield, Mass.; Boston University School of Medicine, 1887; formerly a minister; aged 85; died, November 16, at the Melrose (Mass.) Hospital, of injuries received when the buggy in which he was riding was struck by an automobile.

Clarence Francis Ely ✠ Captain, M. C., U. S. Navy, Norfolk, Va.; Jefferson Medical College of Philadelphia, 1902; chief medical officer of the fifth naval district; aged 49; died, November 2, at the U. S. Naval Hospital, Portsmouth, of pneumonia.

John Timothy McGillicuddy ✠ Worcester, Mass.; Medical Department of Columbia College, New York, 1892; served during the World War; aged 61; on the staff of St. Vincent Hospital, where he died, November 14, of sarcoma of the lung and pleura.

William Dilk Deuschle ✠ Columbus, Ohio; Dartmouth Medical School, Hanover, N. H., 1891; member of the American Psychiatric Association; on the staff of the Mount Carmel Hospital; aged 64; died in November, of arteriosclerosis.

Samuel Empey Robertson ✠ Maplewood, N. J.; Bellevue Hospital Medical College, New York, 1886; formerly medical director of St. James Hospital and the Presbyterian Hospital, Newark; aged 68; died, November 8, of angina pectoris.

Arthur Fredolf Peterson ✠ Brockton, Mass.; University of Maryland School of Medicine and the College of Physicians and Surgeons, Baltimore, 1916; aged 40; was drowned, May 17, at Moosehead Lake, Maine, when his motor boat sank.

George Buckner Le Sueur ✠ Good Hope, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1904; aged 51; died, October 4, at the Baptist Hospital, New Orleans, of atrophic cirrhosis of the liver.

Walter William Callan ✠ Rotan, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1907; formerly secretary of the Fisher County Medical Society; aged 59; died, in November.

Carlos C. Booth ✠ Youngstown, Ohio; Western Reserve University School of Medicine, Cleveland, 1883; formerly county coroner; on the staff of the Youngstown Hospital; aged 67; died, November 19, of pneumonia.

Joseph Edmond Brindamour, Holyoke, Mass.; Laval University Faculty of Medicine, Quebec, Que., Canada, 1893; served during the World War; chairman of the board of health; aged 61; died, November 1.

Chauncey Palmer Smith ✠ Mason City, Iowa; Rush Medical College, Chicago, 1895; aged 64; on the staffs of St. Joseph's Mercy Hospital and the Story Hospital, where he died, November 11, of sarcoma of the bladder.

Theodore Olmsted, Oakland, Calif.; Cooper Medical College, San Francisco, 1887; aged 71; formerly on the staff of the Merritt Hospital, where he died, February 17, of postoperative strangulated hernia.

Leonard Raftery, Philadelphia; Temple University School of Medicine, Philadelphia, 1910; served during the World War; formerly connected with the U. S. Veterans' Bureau; aged 48; died, September 6.

James Edwin Gardner ✠ Medical Director, Captain, U. S. Navy, retired, Holladay, Va.; Medical Department of the Tulane University of Louisiana, New Orleans, 1876; aged 78; died, October 23.

Daniel Zacharias Dunott ✠ Baltimore; University of Pennsylvania School of Medicine, Philadelphia, 1891; aged 58; was killed, November 21, by an automobile, while crossing the street.

William Howard Lyle, Philadelphia; Hahnemann Medical College and Hospital, Philadelphia, 1895; aged 64; died, November 14, following an operation for carcinoma of the stomach and intestine.

Franklin C. Hull, Carlisle, Iowa; College of Physicians and Surgeons, Keokuk, 1876; member of the Iowa State Medical Society; aged 74; was found dead in bed, November 13, of heart disease.

Charles B. Brown ✙ Sycamore, Ill.; University of Buffalo School of Medicine, 1876; on the staff of the Sycamore Municipal Hospital; aged 81; died, November 9, of chronic myocarditis.

Elihu LeRoy Sawyer, Boston; University of Vermont College of Medicine, Burlington, 1883; member of the Massachusetts Medical Society; aged 73; died, November 18, of pneumonia.

Westel Willoughby Ward, Williamson, N. Y.; Medical Department of the University of the City of New York, 1890; aged 72; died, November 3, of cerebral hemorrhage and pneumonia.

Francis James Ball, Regina, Sask., Canada; University of Toronto Faculty of Medicine, Toronto, Ont., 1893; M.R.C.S., England, and L.R.C.P., London, 1907; aged 63; died, September 18.

Milo Kirkpatrick, Portland, Ore.; Rush Medical College, Chicago, 1885; member of the Oregon State Medical Society; aged 72; died, October 23, of heart disease and chronic infectious arthritis.

Howard Irving Woodburn ✙ Cincinnati; Cincinnati College of Medicine and Surgery, 1896; aged 54; died, August 10, of intestinal obstruction following an operation for gallbladder disease.

Fernand D'Orbessan, Ozone Park, N. Y.; Medical Department of Columbia College, New York, 1893; on the staff of St. Anthony's Hospital, Woodhaven; aged 67; died, October 22.

Frederick Arthur Belo, Evergreen, Ala.; Jefferson Medical College of Philadelphia, 1870; member of the Medical Association of the State of Alabama; aged 90; died, October 30.

Frank H. Bartlett, Olean, N. Y.; University of Buffalo School of Medicine, 1879; member of the Medical Society of the State of New York; aged 72; died, in November, of typhoid.

Fernando Aleman y Valle, Arecibo, P. R.; University of Valladolid, Spain, 1883; member of the Medical Association of Porto Rico; aged 76; died, July 29, of pernicious anemia.

Jesse Clark Bowen ✙ Maquoketa, Iowa; Medical Department of the University of Illinois, Chicago, 1906; aged 47; was found dead, November 17, of a self-inflicted bullet wound.

Mortimer Byron Downer, Woodstock, N. Y.; Columbia University College of Physicians and Surgeons, 1896; since 1898 health officer of Woodstock; aged 59; died, October 8.

Joseph M. Davis, Thomasville, Mo.; Louisville (Ky.) Medical College, 1894; member of the Missouri State Medical Association; aged 65; died, November 6, of heart disease.

Henry J. Lower, Marion, Ohio; Starling Medical College, Columbus, 1891; member of the Ohio State Medical Association; aged 68; died, November 3, of cerebral hemorrhage.

Carmon Smith Marshall, Bridgewater, N. S., Canada; Medical Department of the University of the City of New York, 1882; formerly mayor; aged 75; died, August 15.

Robert J. Carroll, Hammond, Ind.; Medical College of Ohio, Cincinnati, 1892; aged 58; died, November 16, at St. Margaret's Hospital, of diabetic gangrene of the leg.

John Walter Swanson, Springfield Center, N. Y.; University of Buffalo School of Medicine, 1873; for more than thirty years health officer; aged 75; died, August 27.

Alma Elizabeth Braucher, Lincoln, Ill.; Hering Medical College, Chicago, 1895; aged 70; died, October 30, at the Deaconess Hospital, of carcinoma of the stomach.

Frederick Russell Bartlett, Norwood, Mass., College of Physicians and Surgeons, Boston, 1885; aged 68; died, September 25, of myocarditis and chronic nephritis.

Arthur Henry Steen, Cottage Grove, Minn.; Rush Medical College, Chicago, 1874; member of the Minnesota State Medical Association; aged 78; died, November 14.

Isaac Edgar Clark, Schulenburg, Texas; Jefferson Medical College of Philadelphia, 1882; for thirty years health officer of Schulenburg; aged 67; died, August 9.

George Baer Fundenberg ✙ Pasadena, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1887; aged 65; died, October 4, of pneumonia.

William Asbury McClain ✙ Sweetwater, Tenn.; University of Nashville Medical Department, 1899; aged 60; died, November 13, of cerebral hemorrhage.

Kinya Tsukahara ✙ Dallas, Texas; Baylor University College of Medicine, Dallas, 1906; aged 55; died, November 22, at the Baylor Hospital, of pneumonia.

Norris A. Williams, Bangor, Mich.; University of Michigan Medical School, Ann Arbor, 1883; aged 70; died, November 19, of carcinoma of the throat.

James Jerome McClellan, Columbus, Ohio; College of Physicians and Surgeons, Chicago, 1886; aged 73; died, November 13, at Dayton, of pneumonia.

Jacob Gillium Cox, Kokomo, Ind.; Medical College of Indiana, Indianapolis, 1892; aged 59; died, October 7, of cerebral hemorrhage and arteriosclerosis.

James Basil Moore, Brooklyn; Medical Department of the University of the City of New York, 1895; aged 76; died, October 2, of chronic myocarditis.

C. F. Tipton, Philadelphia, Mo.; Medical Department of Washington University, St. Louis, 1893; aged 67; hanged himself in a corn crib, September 20.

Edgar Silas Bullis, Red Creek, N. Y.; Medical Department of Drake University, Des Moines, 1888; aged 66; died, September 18, of heart disease.

Jose Eulogio Berrios Centron, Yabucoa, P. R.; University of Barcelona, Spain, 1896; aged 59; died, January 7, of stricture of the esophagus.

William Eugene Delaney ✙ Williamsport, Pa.; College of Physicians and Surgeons, Baltimore, 1891; aged 67; died, August 25, of myocarditis.

Albert C. Snyder, White Haven, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1877; aged 74; died, June 25, of heart disease.

Francis M. Thomas, Hillsboro, Ohio; Cincinnati College of Medicine and Surgery, 1869; aged 90; died, September 4, of arteriosclerosis.

Frederick Chase Witte, Riverside, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1909; aged 44; died, September 27.

Elijah Culver, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1871; aged 86; died, October 22, of senility.

Philip E. Thomas, Sr. ✙ Clarendon, Ark.; Missouri Medical College, St. Louis, 1878; aged 72; died, October 31, of angina pectoris.

Samuel Allison, Caledon East, Ont., Canada; Victoria University Medical Department, Toronto, 1862; aged 94; died, September 29.

William C. Dumble, Toronto, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1870; aged 80; died, November 21.

William C. Neibling, Findlay, Ohio; Pulte Medical College, Cincinnati, 1889; aged 76; died, November 10, of myocarditis.

Milo Bushnell Pond, Napa, Calif.; Toland Medical College, San Francisco, 1864; aged 93; died, June 21, of chronic myocarditis.

Charles Dickens Williams ✙ Cleveland; Western Reserve University School of Medicine, Cleveland, 1900; aged 57; died, November 8.

Robert J. Smith, Whittemore, Mich.; College of Physicians and Surgeons, Baltimore, 1884; aged 75; died, November 10, of senility.

William John Watson ✙ Cheltenham, Pa.; Kentucky School of Medicine, Louisville, 1892; aged 56; died, November 23.

Margaret Blair Gordon, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1898; aged 67; died, September 22.

Samuel William May, Brantley, Ala.; College of Physicians and Surgeons, Baltimore, 1882; aged 70; died, October 29.

Albert Schneider, Portland, Ore.; College of Physicians and Surgeons, Chicago, 1887; aged 64; died, October 27.

Jeremiah Levenous Marbourg, Seattle; Jefferson Medical College of Philadelphia, 1888; aged 67; died, October 5.

J. H. Stevens, Temple, Texas; Louisville (Ky.) Medical College, 1877; aged 92; died, July 5, of heart disease.

Mallie C. Newton, Bonifay, Fla.; Chattanooga (Tenn.) Medical College, 1899; aged 58; died, October 27.

Bureau of Investigation

BAIT FOR NURSES
Gerald A. Richardson Is At It Again

Nurses are receiving a neatly typewritten letter on the stationery of Gerald A. Richardson, M.D., 1840 Barnum Avenue, Bridgeport, Connecticut. Above Richardson's name and address (which is embossed in black) is a flossy coat-of-arms with the motto, *"Pro Deo et Rege."* In his letter to registered nurses, Richardson tells them that he is anxious to send a box of Christmas cards for personal inspection, that they may purchase, or not, as they see fit. If they purchase, the "entire proceeds," according to Richardson, will "go to help a worthy brother to obtain a medical education."

So it seems that Richardson is at it again! Two years ago at this time he was circularizing the superintendents of hospitals and, at that time, in addition to a letter urging them to purchase a box of Christmas cards, sent the box by parcel post. At that time Richardson's story was that he was "associated with a group of physicians who are striving to help a man through medical college;" the man was "rather unfortunate, having no funds, being married and having children." In this case, "all the profits from our sales go directly to our protege."

What is the record of Gerald A. Richardson? He was born in Brooklyn in 1891 and, apparently, holds diplomas from two cheap Kansas City schools, both of 1922. In other words, he appears as a graduate of the Kansas City College of Medicine and Surgery for 1922 and a graduate of the Kansas City University of Physicians and Surgeons for 1922. Both of these are low-grade institutions and neither is recognized by the bulk of the licensing boards of the country. One of them was involved in the "diploma mill" scandal of a few years ago.

Richardson, as one of the "diploma mill" graduates who secured licenses in Connecticut, had his credentials investigated by a grand jury, which recommended that Richardson's license be revoked. It was revoked in 1924, but Richardson carried his case to the Supreme Court of Errors. The superior court dismissed the appeal, the State Supreme Court confirmed the judgment of the lower court, and Richardson then carried his appeal to the United States Supreme Court, which refused to hear the case. Today, therefore, Richardson holds no license to practice medicine in the state of Connecticut.

In 1920 (two years before the date of his Kansas City diploma) Richardson was reported to have been arrested as an osteopath in New Jersey, and fined $200 for the illegal practice of medicine. In 1924 Richardson was operating a nostrum outfit called the "Ethical Products Company," which exploited, especially, two preparations — "Richatonica" and "Richaphosphica." He attempted to get medical students who were working their way through college to act as "detail men."

In view of the man's professional history, it seems wholly fitting that Gerald A. Richardson should live on the street that is called "Barnum." If he would change the motto of his coat-of-arms to read, *"Pro Richardson; Caveat Emptor,"* the picture would be complete.

"MME. PERRY, DERMATOLOGIST"
A Grow-Hair-Quick Fake Debarred from the Mails

From Lynn, Massachusetts, Mrs. Sadie L. Perry, sixty years old, carried on a fraudulent business under various trade names —"Mme. Perry, Dermatologist," "Mme. Perry, Miracle Woman of the World," etc. Mrs. Perry was engaged in selling, through the United States mails, a recipe of a medicinal preparation, and also the preparation itself, under the claim that, when used, the product would grow hair on bald heads, stop falling hair, cure dandruff, restore gray and faded hair to its former color and make the eyebrows grow!

One of the Post Office inspectors, who was assigned to the case, sent a letter to Mrs. Perry, stating that he had been bald for thirty years and that he would like some nice red hair, and that he was enclosing a dollar for the recipe that he hoped would bring him what he desired. He received, in due time, the recipe, which called for given amounts of sugar of lead, lac sulphur, borax, alcohol and ammonia.

Mrs. Perry also sold what she called an "Evacuating Fluid" and a "Shampoo." The Evacuating Fluid was, apparently, nothing but water colored pink, while the Shampoo was a solution of soap and water. Sadie L. Perry also offered in her literature to make a free microscopic examination of any hair that might be sent. The Post Office inspector sent Sadie two strands from a horse's mane, and the lady came back with a letter stating that her microscopic examination of the hair had disclosed that the hair roots were too small and that they needed to be increased in size, which would "prevent them from sliding out of the hair follicle."

The evidence collected by the postal inspectors made plain that Mme. Perry was not only without any medical training, but very illiterate. The Solicitor for the Post Office Department, after going over all the evidence, declared that the scheme conducted by Mrs. Perry was one of obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and he therefore recommended that a fraud order be issued against Mme. Perry. It was issued, August 3, 1928.

Correspondence

LEIOMYOSARCOMA OF THE UTERUS

To the Editor:—In a recent paper read by Dr. Walter D. Dannreuther of the New York Post-Graduate Medical School before the section on Obstetrics, Gynecology and Abdominal Surgery (THE JOURNAL, November 17, p. 1532), I find much of interest. First, Corscaden is quoted as saying, "The development of sarcoma in a myoma is to me an academic and not a clinical problem." This is undoubtedly true, since the surgeons, and I refer to the better versed ones, are unable to make a diagnosis unless the condition is so evidently malignant that this operation would be of little avail, and many surgeons are pathologists. Then, many degenerating leiomyomas arouse suspicion, as they often are quite vascular, pigmented, soft and friable and, although capsulated, sometimes only relatively so. As to the unusual friability of the broad ligaments, I cannot understand this unless permeation of the tumor into the ligaments is inferred. An opaque appearance on section is frequently the result of degeneration only. Edema, evident on cut section, often is present in degenerated fibroids, no doubt as the result of the greatly increased internal pressure. The surgeon does not hesitate to admit the difficulty in macroscopic diagnosis; why, then, the unseemly inferences in regard to the microscopic diagnosis, especially when suspicion is aroused? Until more postmortem investigations are carried out in surgically treated cases, the autopsy rooms will still "remain as empty of women dead of sarcoma of the uterus as they did in the years before hysterectomy was so universally performed." This will be true unless careful postmortem examination in hospital cases within a few months of operation is carried out and a satisfactory follow-up and investigation made of those who die from six months to two or three years later of metastatic growths. The panhysterectomy method will decrease the causes of death in these cases, obviously; but when is it justified?

In regard to the remark that "it does not seem legitimate for a pathologist to imply that a specimen is malignant unless it actually is," I presume that Dr. Dannreuther means actually "is malignant," not "suggestive of a malignant condition." The belittled pathologist is supposed to render a positive or negative diagnosis without any ifs, in spite of the fact that his vision is simply magnified. There is no consensus even in regard to mitotic figures, more than that they indicate rapid cell division.

Again, I think it unfair to mention the fact that several cases were suspected on the advent of a new pathologist. It

frequently has been noted in pathologic work that cases of a certain type seem to run in series; for example, in my own experience, two instances of sarcoma of the choroid and two or three carcinomas of the appendix occurred in one year. As to malignant growths here or in papillary adenocystoma, all one can do is to suggest the possibility of malignant conditions. In regard to the number of surgical cases showing leiomyosarcoma in the large hospital, it is just as likely that the same number of cases could be encountered in some medium sized, relatively rural hospital if careful investigation were done. It is the macroscopic nonmalignant, microscopic malignant case that is causing trouble. True, the cautious and conservative pathologist can only suggest that a malignant growth is present; this should be sufficient for the conscientious surgeon to follow up with further investigation, especially to get a postoperative roentgenogram for comparison with a later roentgenogram of the thorax.

JOHN B. DONALDSON, M.D., Lorain, Ohio.

PROSTATIC MASSAGE

To the Editor:—In THE JOURNAL, November 3, there was an article by Dr. A. L. Wolbarst, regarding a method of applying vibratory massage to the prostate.

I have been using a method of prostatic vibratory massage for the last five years, which may be of some interest to the men who would not care to purchase as expensive an apparatus as that mentioned by Dr. Wolbarst. It simply consists of applying the finger cot in the same manner as is used in ordinary prostatic massage, and after inserting the lubricated finger in the rectum, the operator places an ordinary drug store vibrator over the second metacarpal. By increasing or decreasing the pressure on the prostate, one can massage the gland satisfactorily and without any trauma by means of the transmitted oscillation.

Of course the oscillations do not reach the number per minute of Dr. Hays' apparatus, but they are very satisfactory and do away with the old rather traumatizing method of massage.

RONALD B. ROGERS, M.D., Neenah, Wis.

CHEMICAL OBLITERATION OF VARICOSE VEINS

To the Editor:—The interesting leaf from the diary of the grandfather of Dr. L. Minor Blackford (THE JOURNAL, November 10, p. 1482) regarding the chemical obliteration of varicose veins on Dec. 8, 1863, is of more than chronological value.

The important fact which this early record yields is that it indicates the fundamental difference between the method used at that period and the method now employed with so much success. This fundamental difference is based on sound physiologic principles and lies in the fact that the chemicals used in the earlier period were blood coagulants in contradistinction to the chemicals used today, which are anticoagulants and in consequence act in an entirely different manner.

Dr. Blackford's grandfather used the persulphate of iron, which was the drug introduced for that purpose by Pravaz in 1851. The intravenous use of that chemical, from the present-day point of view, would be considered a most hazardous procedure.

The success of the treatment now employed depends on the action of the chemical on the intima and probably the other coats of the vein wall, and not on the contained blood. This action begins with an endophlebitis followed by a plastic fibrinous formation lining the entire venous segment, and terminating in obliteration of the lumen and sclerosis of the entire vein wall.

The underlying physiologic principle is that discovered many years ago by von Brücke in his experiment on the jugular vein of a horse, in which he demonstrated that the fluidity of the blood while retained within the vein is dependent on a definite relationship between the intima and the fibrinogen of the blood; and that conversely, when that relationship is disturbed, the normal fluidity of the blood is altered.

It would appear, therefore, that the chemical obliteration of varicose veins by means of injections is brought about by the induction of a pathologic process beginning in the vein wall followed by a series of changes that lead to complete vascular obstruction.

EUGENE H. EISING, M.D., New York.

ANIMAL EXPERIMENTATION

To the Editor:—In war it is a well known axiom that often the best defense is a vigorous offense.

Prof. Yandell Henderson (THE JOURNAL, December 1, p. 1737) is right in advocating that the use of dogs in experimental research should be made not only legal but obligatory on all those having stray dogs under their care.

For about sixty years I have carried on an aggressive war on the antivivisectionists and the antivaccinationists not only in Pennsylvania but also and especially in Washington. So far they have always been beaten at their own game. But Professor Henderson is right, physicians must now "carry the war into Africa"; "Delenda est Carthago."

Though I am old, I am not too old to keep in this aggressive fight, but I cannot undertake the labor of leadership. Younger men must do that; why not Professor Henderson himself?

W. W. KEEN, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

EXCESS OF UREA IN URINE

To the Editor:—Will you please discuss the significance of an excess of urea in the urine. In several cases of diabetes mellitus I have noticed that, as the percentage of sugar decreases, the amount of urea increases. On the other hand, I have several patients who have never presented symptoms of diabetes mellitus but who constantly eliminate from 35 to 40 Gm. of urea per thousand cubic centimeters of urine. Please omit name.

M.D., New York.

ANSWER.—No constituent of the urine is more variable than the urea. The exact amount excreted changes within wide limits with changes in the protein intake. Urea itself has nothing to do with the metabolism of diabetes mellitus, but the urea excretion may show changes when acidosis is present even to a slight degree. When acidosis exists in diabetes there is a change in the nitrogen metabolism to form more ammonia and less urea. The ammonia then becomes available to combine with the acids formed. In such cases the urea excretion will be diminished. It is possible that in the cases noted the decrease in the sugar excretion means improved metabolism, more complete oxidation of fats, and therefore less demand for ammonia. The urea would then increase.

DYSTROPHIA ADIPOSOGENITALIS

To the Editor:—I would greatly appreciate being advised in regard to the efficacy of endocrine (or any other) therapy or dosage in a case of dystrophia adiposogenitalis in a boy, aged 12 years, weighing 156 pounds (71 Kg.) and 62 inches (157.5 cm.) tall. The patient comes in complaining of enuresis. The foreskin is long but easily retracted. The tonsils are enlarged and ragged. The temperature is 99 F. Please omit my name.

M.D., Ohio.

ANSWER.—It would be necessary to know the cause for the enuresis in this patient before attempting any therapeutic measures. It would be well to measure the total output of urine for twenty-four hours and determine the specific gravity and also to determine whether the sella turcica is normal. A total output of urine of from 3 to 4 liters with a low specific gravity would point to diabetes insipidus and account for the dystrophia adiposogenitalis. In diabetes insipidus the urinary output may be decreased by applying weak dilutions of a pituitary solution

to the nasal mucosa. The output often may be cut down from 4 liters to less than 1 liter in twenty-four hours with a pituitary solution. A method was described by Kintner and Green in THE JOURNAL, November 3, p. 1370, for the administration of a pituitary solution by nasal spray.

Some malformation of the genito-urinary tract may be the cause of the enuresis. This should be fully investigated in order to determine whether the patient has a congenitally small bladder or malformation which may be the cause for bedwetting. On the other hand, the enuresis may be simply a habit, in which case limitation of fluids after 5 p. m., making the patient sleep on a hard mattress on his side, raising the foot of the bed, arousing him at 10:30 or 11 in the evening and making him empty his bladder when he is fully awake, psychologic suggestion, with minute doses of atropine may be all that is necessary to cure this condition.

The essential point is to determine the cause of the enuresis and then use treatment applicable to that type.

BLOOD IN STOOLS OF INFANT AFTER BIRTH

To the Editor:—A short time ago I had a case of partial premature separation of the placenta in a woman at term with the cervix partly dilated. Manual dilation of the cervix was done and the membranes ruptured without the hand being removed from the uterus, so that the amniotic fluid would not come away and a version and extraction was done, and a normal healthy infant delivered. For several days following delivery the baby passed considerable blood mixed with its stools. The baby seemed perfectly healthy and gave no evidence of internal hemorrhage, and my deduction is that the blood in its stools came from swallowed bloody amniotic fluid. I present this case as further evidence that the fetus does swallow amniotic fluid in utero.

M.D., Rock Island, Ill.

ANSWER.—It is a most generally accepted fact that a fetus in utero swallows liquor amnii. In the case cited, the blood in the stools may have been blood which the child swallowed with the amniotic fluid, but most likely the blood thus swallowed was not the only source of the blood in the stools. Part of the blood may have come from hyperemia or minute hemorrhages in the intestine, for this intestinal condition is not uncommon in babies born of mothers who have premature separation of the placenta. Many women with abruptio placentae have at the same time a severe degree of toxemia, and this may be the cause of extensive hyperemia of the bowel in the fetus. Bonar recently (October, 1928) made the claim that more than a fourth of all new-born babies show blood in the stool during the first few days of life because of hyperemia in the small intestine produced by irritation of the early products of digestion, by the initial bacterial invasion or by both.

Other sources of blood in the stool may be hemorrhage from injuries to the nose, mouth and pharynx, sometimes the result of version and extraction, which was performed in the case cited. Occasionally blood in the stool is the result of fissured nipples, rhagades, excoriated buttocks, hemorrhage from the genito-urinary tract, hemorrhagic disease and sepsis.

BLEEDING OF THE NOSE

To the Editor:—I wonder whether you have any literature on the effect on the nose and of nosebleeds of working in a room where a mixture of copper carbonate and sodium cyanide are heated, giving a copper cyanide solution.

W. L. GILLS, M.D., Hartford, Conn.

ANSWER.—Literature precisely based on the work hazards mentioned is not available. Both the original materials (copper carbonate and sodium cyanide) and the resulting products (sodium cupricyanide and sodium carbonate) are known irritants. If the solution, at the time of the chemical reaction, is, by accident or design, acid, sodium carbonate will not be formed. Instead, hydrocyanic acid is liberated. Wherever hydrocyanic acid is formed it is highly volatile, diffusable and irritating. Small quantities act as respiratory tract irritants, causing marked dryness of the affected membranes. Minute quantities of the gas or dust of cyanide salts may set up "cyanide ulcers." These do not readily respond to treatment. The septum of the nose and other portions of the respiratory tract are well known sites for these ulcers. Nasal hemorrhage may be expected to arise both from the diffuse inflammation and from the localized ulcers. These nasal hemorrhages are not known to be the result of any specific action of the toxic irritant and are not unlike the hemorrhage of any other eroding lesion. Rarely, in profound cases of chronic cyanide poisoning attended by anemia, nasal hemorrhages may occur as manifestations of anemia.

General data on cyanide poisoning may be found in Hamilton's "Industrial Poisons in the United States," New York, Macmillan Company, p. 344.

VACCINES OR IMMUNOGENS

To the Editor:—Please explain the difference between vaccines and immunogens. Is one more useful in treatment than the other, or have they separate spheres of usefulness? Are the commercial immunogens satisfactory or should they be prepared from autogenous material? Please omit name.

M.D., Michigan.

ANSWER.—There is no difference between vaccines and immunogens. Their sphere of action is the same. Generally speaking, it would be best to prepare vaccines or immunogens from "autogenous material," but when that is not practicable commercial preparations may be used.

TREATMENT OF SYPHILIS

To the Editor:—A woman, aged 24, married, without chidren, has had two miscarriages at seven and eight months. The Wassermann reaction is four plus. I have given her nineteen doses at six day intervals of 0.6 Gm. of neoarsphenamine, intravenously, also the following prescription:

Hydrargyri chloridum corrosivum	gr. i
Potassii iodidum	ʒ iv
Syrupus sarsaparillae	q. s. ad ʒ iv

M. Sig. ʒi aq. P. C.

The Wassermann reaction is still four plus. Her husband had a one plus reaction but it is now negative, with no reinfection. She feels better. Will you outline or write me and tell me what to give this patient? Should I continue the neoarsphenamine, etc.?

M.D., North Carolina.

ANSWER.—The refractory attitude of the patient toward arsenic therapy would seem to call for energetic mercury medication.

Among other methods, corrosive mercuric chloride in watery solution is injected intravenously. Each dose contains 0.01 Gm. (one-sixth grain) of the drug dissolved in 1 cc. (16 minims) of sterile water. Such ampules are on the market ready for use.

For twelve consecutive days the contents of one ampule are injected once a day. Occasionally appearing enteric disturbances call for a slight reduction of the daily dose and the administration by mouth of bismuth salicylate.

After an interval of two weeks a full course of inunctions with the mild mercurial ointment U. S. P. (30 per cent) is administered. Minute care of the teeth and the gums is imperative during the administration of mercury compounds. This cycle is to be repeated if necessary.

Some authors report favorably on the efficacy of bismuth injections. Potassium bismuth tartrate (New and Nonofficial Remedies, 1928, p. 110), potassium sodium bismuthotartrate (New and Nonofficial Remedies, 1928, p. 106) and sodium bismuth tartrate (New and Nonofficial Remedies, THE JOURNAL, June 30, p. 2103) in ampules are useful compounds. Every other day the contents of one ampule are injected intramuscularly. Each cycle of treatment consists of twelve injections.

PASCARNATA—MERRELL

To the Editor:—Can you give me the formula of "Pascarnata," put out by the William S. Merrell Company, and let me know whether it is recommended by the Council?

C. B. LEWIS, St. Cloud, Minn.

ANSWER.—According to the catalogue of the William S. Merrell Company, Pascarnata is prepared from fresh *Passiflora incarnata* (passion flower) and represents the medicinal virtues of the whole plant, but no statement of the amount of passion flower contained in a given quantity of this proprietary is given. Pascarnata has not been accepted for New and Nonofficial Remedies nor is any passion flower preparation included in the book. The following are some of the claims advanced for Pascarnata: "It serves as an ideal sporific [soporific?], without narcotic action, and is one of the most desirable antispasmodic and antineuralgics available." "In nervous or sick headache, sleeplessness of typhoid and other fevers, cerebral excitement, overworked mental faculties, brain-fag and the over-stimulation due to worry and hysteria, Pascarnata will be found highly effective." "It is useful as a palliative in spasmodic bronchial asthma and whooping cough, and also in the hysteria due to dysmenorrhea."

The following is the estimate of passion flower that is contained in the Epitome of the U. S. Pharmacopeia and National Formulary issued by the Council on Pharmacy and Chemistry: "Exploited by manufacturers of proprietary medicines for the treatment of insomnia, but probably inert." At one time passion flower was a constituent of many so-called female remedies and uterine tonics, but Pilcher, Delzell and Burman (THE JOURNAL, Aug. 12, 1916, p. 490) found it without effect in excised guinea-pig uterus. They concluded that the use of the drug is harmful as well as futile in that it tends to perpetuate therapeutic fallacies.

CLIMATE FOR RESPIRATORY INFECTIONS

To the Editor:—A father, mother and two young children are very susceptible to acute respiratory infections but do not have any evidence of tuberculosis. In the near future the father will have a choice of several locations in different parts of the country as a permanent home. What section of the country would be best suited for them from the standpoint of respiratory infections? Are there any statistics as to the incidence of such infections in various cities of the country? Please omit my name.

M.D., Chicago.

ANSWER.—The family in selecting a new home should try to find a location free from sharp changes in temperature in the course of a few days. Severe winter weather with low temperatures and much moisture should be avoided. A part of the country that is favored by mild weather and sunshine would seem to be what this family is looking for. Should a dry climate be selected, attention should be paid to the possibility of dust storms. Despite the fact that tuberculosis does not appear to have been discovered in this family, the occurrence of frequent colds is suggestive.

MEDICATED ALCOHOL IN OTITIS MEDIA

To the Editor:—I desire information as to the different forms of medicated alcohol with reference to their suitability in treatment of otitis media. Is there any form of medicated alcohol that can be used as freely and is as efficient for use in the ear as the unmedicated grain alcohol? Can you furnish me with a list of different formulas approved by the government for medicating alcohol?

W. B. P., M.D., Carthage, Mo.

ANSWER.—It seems *a priori* that it would be better to use alcohol-U. S. P. (pure grain alcohol) and not take any chances of irritation from the presence of various substances used to medicate alcohol. The formulas approved by the government for medicating alcohol are:

1. Formaldehyde, 2 parts; glycerin, 2 parts; alcohol, 96 parts.
2. Phenol, 1 drachm; tannic acid, 1 drachm; alcohol, 1 pint; water, 1 pint.
3. Alum, ½ ounce; formaldehyde, 2 drachms; camphor, 1 ounce; alcohol and water, each 1 ounce.
4. Compound solution of cresol-U. S. P., 10 cc.; alcohol, 1,000 cc.

INTRANASAL INSTILLATIONS — HEXYLRESORCINOL SOLUTION S. T. 37

To the Editor:—Is hexylresorcinol solution S. T. 37 considered a better solution for intranasal instillation or as a mouth wash in upper respiratory infections than mild silver protein? If so, is it toxic in full strength? Is there any limit to the frequency of repeated treatment? Please omit name and address.

M.D., Nebraska.

ANSWER.—It would require a great deal of experimental work and long continued observation to determine whether hexylresorcinol solution S. T. 37 (New and Nonofficial Remedies, THE JOURNAL, Jan. 28, 1928, p. 293), is a better preparation for nasal and mouth use than mild silver protein solution. The two medicinals differ so radically in their chemical composition that it would seem *a priori* that their action should be dissimilar.

TECHNIC OF SEDIMENTATION TEST

To the Editor:—Kindly publish the technic for erythrocyte sedimentation tests. I see occasional references to it in the literature, but the method of doing it is not given. Is special glassware necessary? If so, where can it be secured? Please omit name.

M.D., Braddock, Pa.

ANSWER.—There are several different ways of performing the erythrocyte sedimentation test. A modification of Westergren's method, which is suitable under most circumstances, is as follows: By venipuncture blood is drawn into a small syringe and immediately mixed with 3.8 per cent solution of sodium citrate, four parts of blood to one of citrate. This is mixed thoroughly and then drawn up to the 200 mm. mark in a 1 cc. pipet (300 mm. long with an internal diameter of 2.5 mm.), after which the pipet is stoppered. The time is noted and readings are made after one, two and twenty-four hours. The reading is the number of millimeters between the serum level at the 200 mm. mark and the erythrocyte level. Then, as explained by Westergren (*Brit. J. Tuberc.* **15**:72 [April] 1921), "if the figure for one hour is compared with the *halved* figure for two hours, and the bigger of these two figures is regarded as expressing the *sedimentation per hour*, the reaction is expressed closely enough with one figure only." Normal two hour readings in the male lie between 1 and 5 and in the female between 5 and 10. The only special glassware needed is a small calibrated glass syringe, a 5 cc. calibrated measuring cylinder, and a 300 mm. (internal diameter 2.5 mm.) calibrated pipet. These may be obtained from any laboratory supply house.

APHONIA AFTER TONSILLECTOMY

To the Editor:—In answering the query of the Washington physician (THE JOURNAL, November 3, p. 1395) as to the cause of the aphonia and dysphagia of his patient following a tonsillectomy, I note that you failed to mention the probable factor of the recurrent laryngeal nerve in the difficulty. Many operators forget that a branch of this nerve serves this area, and in their enthusiasm to remove all the tonsillar tissue—capsule and all—they do damage to this branch, and encounter the same after-effects that so often confront operators on goiters when they attempt to go beyond the capsule. We older men therefore have more respect than censure for the younger men who err by taking too little rather than too much of this tissue. At the hyoid eminence this is particularly liable to happen to both the nerve and the cervical fascia.

E. F. HERDIEN, Watseka, Ill.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 8-11, 1929. Sec., Miss Bessie Tucker, 519 Dexter Ave., Montgomery, Ala.

COLORADO: Denver, Jan. 8, 1929. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver, Colo.

DISTRICT OF COLUMBIA: Washington, Jan. 8, 1929. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye St., Washington, D. C.

HAWAII: Honolulu, Jan. 14, 1929. Sec., Dr. James A. Morgan, Room 48, Young Bldg., Honolulu, Hawaii.

ILLINOIS: Chicago, Jan. 22-24, 1929. Supt. of Registration, Dr. V. C. Michels, Springfield, Ill.

MINNESOTA—Basic Science: Minneapolis, Jan. 2, 1929. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., University of Minnesota, Minneapolis, Minn.

MINNESOTA: Minneapolis, Jan. 15-17, 1929. Sec., Dr. A. E. Comstock, 524 Lowry Bldg. St. Paul, Minn.

NEW YORK: Albany, Jan. 28-31, 1929. Chief, Mr. H. J. Hamilton, Dept. of Education, Educational Bldg., Albany, N. Y.

NORTH DAKOTA: Grand Forks, Jan. 1, 1929. Sec., Dr. G. M. Williamson, Grand Forks, N. D.

OREGON: Portland, Jan. 2-4, 1929. Sec., Dr. Joseph F. Wood, 510 Selling Bldg., Portland, Ore.

PENNSYLVANIA: Harrisburg, Jan. 8-12, 1929. Director, Dr. C. D. Koch, Board of Medical Education and Licensure, Harrisburg, Pa.

RHODE ISLAND: Providence, Jan. 3-4, 1929. Sec., Dr. B. U. Richards, State House, Providence, R. I.

SOUTH DAKOTA: Pierre, Jan. 15, 1929. Director, Dr. H. R. Kenaston, Bonesteel, S. D.

WASHINGTON: Basic Science: Olympia, Jan. 10, 1929. Director, Mr. Charles Maybury, Department of Licenses, Olympia, Wash.

WASHINGTON: Olympia, Jan. 14, 1929, Director, Mr. Charles Maybury, Department of Licenses, Olympia, Wash.

WISCONSIN—Basic Science: Milwaukee, Dec. 15, 1928. Sec., Prof. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis.

WISCONSIN: Madison, Jan. 8-10, 1929. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse, Wis.

Oklahoma May Reciprocity Report

Dr. J. M. Byrum, secretary of the Oklahoma State Board of Medical Examiners, reports 8 physicians licensed by reciprocity as of May 17, 1928. Two physicians were issued duplicate licenses, and one was given license through re-registration. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1927)	Arkansas
Univ. of Louisville School of Med.		(1924)	Texas, (1926) Kentucky
Tulane University of Louisiana School of Medicine		(1922)	Louisiana
University of Michigan Medical School		(1899)	Michigan
University of Minnesota Medical School		(1923)	Minnesota
St. Louis University School of Medicine		(1904)	Kansas
University of Texas School of Medicine		(1916)	Texas

Connecticut August Reciprocity Report

Dr. Robert L. Rowley, secretary of the Connecticut State Board of Medical Examiners, reports 8 physicians licensed through reciprocity and 1 by endorsement of credentials, as of August 8, 1928. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1914)	Illinois
Tulane University of Louisiana School of Medicine		(1906)	Louisiana
Johns Hopkins University School of Medicine		(1923)	Maryland
Harvard Medical School		(1923)	Maine
Columbia Univ. College of Phys. and Surg.		(1904), (1906)	New York
Cornell University Medical College		(1915)	New York
University of Toronto Faculty of Medicine		(1910)	New York

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement from
Johns Hopkins University School of Medicine		(1919)	N. B. M. Ex.

Oregon July Examination

Dr. Joseph F. Wood, secretary of the Oregon State Board of Medical Examiners, reports the written examination held at Portland, July 5-7, 1928. The examination covered 11 subjects and included 110 questions. An average of 75 per cent was required to pass. Of the 28 candidates examined, 24 passed and 4 failed. Seventeen physicians, of whom 4 were osteopaths, were licensed by reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
Rush Medical College	(1928)*	81.9, 83.3
Syracuse University College of Medicine	(1928)	82.6
University of Oregon Medical School (1928) 81, 81.9, 82, 82.5, 82.8, 82.9, 83, 83.4, 83.7, 83.8, 84, 84.5, 84.7, 84.9, 86, 87.9, 88, 88.9	(1927)	84,
Hahnemann Med. Col. and Hosp. of Phila., Homeo.	(1928)	85.8
University of Toronto Faculty of Medicine	(1928)	90

FAILED

College	Year Grad.	Per Cent
University of Oregon Medical School	(1928)	78, 79, 79
University of Manitoba Faculty of Medicine	(1917)	73

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Atlanta College of Physicians and Surgeons	(1913)	Georgia
Loyola University School of Medicine	(1926)	Illinois
Northwestern University Medical School	(1911)	Illinois
Rush Medical College	(1906), (1912)	Washington, (1920) S. Dakota
University of Louisville School of Medicine	(1911)	Texas
Bowdoin Med. School (Med. Dept. of Bowdoin Coll.)	(1920)	Minnesota
Harvard University Medical School	(1926)	R. Island
University of Michigan Medical School	(1923)	Michigan
Washington University School of Medicine	(1927)	Missouri
University of Cincinnati College of Medicine	(1920)	Ohio
Woman's Medical College of Pennsylvania	(1909)	New Jersey
Osteopaths	Iowa, Nebraska, Iowa,	Washington

* Not a graduate until 1929.

Book Notices

RADIOLOGIE DU COEUR ET DES VAISSEAUX DE LA BASE. Par H. Vaquez, professeur à la Faculté de Paris, et E. Bordet, chef de laboratoire à la Faculté de médecine de Paris. Fourth edition. Paper. Pp. 499, with 457 illustrations. Paris: J. B. Baillière & Fils, 1928.

This is really a new edition in one volume of what had been previously published in three volumes: The Heart and the Aorta; Radiology of the Vessels at the Base of the Heart; Dilatation of the Heart. The subjects have been rewritten and there are numerous additions. A lucid text, together with helpful figures and diagrams, make the book easy to read and to understand. The thoroughness with which the various topics are handled, together with the deservedly high reputation of the authors, renders the book authoritative. One is especially impressed by the chapters dealing with the aorta and the pulmonary artery. Throughout the work emphasis is placed on the significance of even slight variations from the normal roentgenogram. A difference in measurement of only a few millimeters may be interpreted as of great clinical importance. One wonders at times whether the authors have taken into account, as they should, the variations that may be regarded as within the limits of the normal. The book, valuable for study and for reference, should do much to stimulate clinicians and roentgenologists, at least in this country, to a more careful study of the heart in health and in disease, by means of the roentgen ray.

DISEASES OF THE GALL BLADDER AND BILE DUCTS. A Book for Practitioners and Students. By Evarts Ambrose Graham, A.B., M.D., Professor of Surgery, Washington University School of Medicine; Warren Henry Cole, B.S., M.D., Instructor in Surgery, Washington University School of Medicine; Glover H. Copher, A.B., M.D., Assistant Professor of Surgery, Washington University School of Medicine, and Sherwood Moore, M.D., Professor of Radiology, Washington University School of Medicine. Cloth. Price, $8 net. Pp. 477, with 232 illustrations. Philadelphia: Lea & Febiger, 1928.

This new work on diseases of the gallbladder and the biliary duct covers the entire subject in a systematic way but with particular emphasis on much of the newly discovered knowledge. It is the first comprehensive discussion of this subject that has appeared in the English language since Rolleston contributed his classic work, "Diseases of the Liver, Gall Bladder and Bile Ducts," which appeared in 1905. This is all the more surprising when one realizes the great frequency of diseases of the biliary system and their importance. Various studies cited in this book indicate that between 20 and 25 per cent of all adults have gallstones; probably an equal number have cholecystitis without stones; consequently, 40 per cent of our adult population have disorders of their biliary system, and in the majority of instances these are at times associated with more or less severe symptoms.

The authors have endeavored to cover the subject systematically. It has been one of their desires to assemble as much of the newer literature on the subject as possible, that the book may serve as a convenient guide to the large amount of work done in this field in recent years. As most of the newer work deals with the physiology of the gallbladder and the diagnosis of its disorders by new methods, a large portion is devoted to this subject. Probably as a result of this and because the authors have been among those who have made some of the most important contributions along these lines, the book may be criticized for the disproportionate amount of space devoted to a consideration of refined methods of laboratory diagnosis at the expense of a correspondingly adequate consideration of the strictly clinical knowledge of the subject. This is clearly seen from the fact that thirty-nine pages are devoted to anatomy of the extrahepatic bile passages; fifty-one pages to physiology of the gallbladder; twenty-nine pages to the pathology of cholecystitis; twenty pages to gallstones; only twenty-seven pages to the symptoms and clinical diagnosis of diseases of the gallbladder, including cholecystitis acute and chronic, with the differential diagnosis, parasitic diseases of the gallbladder, diagnosis of cholecystitis at operation, tumors of the gallbladder, injuries of the biliary passages and torsion of the gallbladder; and thirty-six pages to the bile ducts. On the other hand, a hundred pages are devoted to the radiology of the biliary tract, of which only eight pages are devoted to a discussion of the value of the roentgen examination, excluding cholecystography, while eighty pages deal with the subject of cholecystography. Although no one will deny that Graham and his co-workers deserve great credit for originating and developing cholecystography, which is one of the main advances in the diagnosis of gallbladder disease, a well balanced work on diseases of the gallbladder and its ducts would not devote such a proportion of the work to this subject. Fifty-five pages discuss the application of tests of hepatic function to diagnosis of biliary disease, which, while interesting and valuable in presenting this complex subject in a masterful manner, nevertheless may also be criticized as being overstressed, for actually these are thus far of little clinical value.

The authors have contributed valuable studies from the use of phenoltetraiodophthalein as a test of hepatic function in combination with cholecystography, though they state that the series has been too small to allow of infallible conclusions. Nevertheless several features of importance have been consistent. Probably the most important observation has been the ability to predict to a large extent the status of operability, that is, operative risk and optimal time for operation, by the amount of retention of dye in the blood stream following injection. They feel safe in concluding that a high retention of the dye indicates a status of poor operative risk and that it would be wise to confine any operative procedure to the minimum that is most imperatively demanded. The most valuable information from the standpoint of differential diagnosis is encountered in jaundice caused by obstruction of the common duct by stone, and carcinoma of the liver. Uniformly the retention is greater in patients having common duct stone even though jaundice has been present in the carcinomatous patient for several weeks. Observation after a lapse of time reveals an increase in retention in the patients having duct obstruction by stone, but almost a stationary reading in patients with hepatic carcinoma, until the terminal stage is reached. A lower grade of retention was encountered in patients with obstruction of the common duct due to carcinoma of the pancreas than in patients with obstruction caused by stone. The presence or absence of infection within the liver would appear to be the controlling factor in the amount of retention. The intensity or duration of jaundice does not control the amount of retention. In their series, the type of jaundice has been the factor that determined the amount of retention. A higher retention was found in cases of jaundice produced by stone in the common duct than in those with

obstruction due to other causes. Of the two most popular tests for liver function (dye and bilirubin), the dye test is probably superior. However, since the two methods are tests of different hepatic functions, one cannot be discarded in favor of the other.

The entire subject of surgical treatment of cholecystitis is condensed into fifty-seven pages and this concludes the volume.

The chapter on anatomy is good but no mention is made of kinks at the neck of the gallbladder and beginning of the cystic duct, which has been reported on in recent years by several surgeons.

The chapter on physiology is a real contribution to the literature and much work in this field has been contributed by Graham and his co-workers. The chapters on pathology of cholecystitis and gallstones are excellent, but the chapter on symptoms and clinical diagnosis of diseases of the gallbladder, including the differential diagnosis from other conditions, is inadequate. In considering the differential diagnosis of cholecystitis, attention is called to intestinal allergy, or anaphylaxis, a condition that has received almost no mention elsewhere but which the authors consider of great importance. They discuss two cases in which there was sensitiveness to wheat, the ingestion of which produced the supposed gallbladder symptoms. While it is important for surgeons to be acquainted with the fact that certain persons, such as those suffering from hay-fever and asthma, may have gallbladder-like symptoms produced by the ingestion of certain food materials, a discussion of differential diagnosis which does not take up such important subjects as liver abscess and subphrenic abscess can hardly be considered exhaustive. The entire differential diagnosis from appendicitis occupies only six lines. Mention is not made of the fact that rarely the gallbladder may be found lying in the right lower quadrant of the abdomen, nor is mention made of the fact, which is not at all uncommon, that a diseased appendix may lay high in the abdomen, close to the liver, and in such cases the differential diagnosis between appendicitis and cholecystitis may be difficult. In emergency cases in which one has not the time for roentgenologic studies, the clinical diagnosis may present great difficulty. Proper stress is not laid on the fact that acute passive congestion of the liver may strikingly simulate gallbladder disease, though the fact is suggested in mentioning cardiac decompensation due to chronic myocarditis. Recent work dealing with cardiac irregularities (such as extrasystoles), and the fact that their presence may be an indication for rather than against operation when the diagnosis of gallbladder disease is established, is also omitted.

The section dealing with the radiology of the biliary tract is not only the most extensive but also the most valuable portion of the work. However, many medical men of large experience would be unwilling to agree with the authors' evalution of gallbladder roentgenology without the use of the dye. Those who have had the advantage of the cooperation of roentgenologists of adequate skill and experience have found the direct and indirect signs derived from films, without the use of dye, to be of far greater value than the authors indicate. When the authors state that "the method was certainly not useful in the average institution nor by the average radiologist," this is a reflection on the average skill and ability of roentgenologists in the average institution rather than on the method itself.

There is no question that "cholecystography is an extremely accurate picture of the functional capacity of the gallbladder." The method is certainly of great value in studying the physiology of the gallbladder. Many men of experience will agree with Eusterman and Mateer and Henderson that a pathologic gallbladder may present normal cholecystograms. Every one will agree with the authors that cholecystography is not to be substituted for other diagnostic means, either radiologic or physical. The authors give as contraindications to cholecystography patients with heart disease in a decompensated state and those who are subjects of arteriosclerosis, especially if the arterial tension is low, those with badly damaged livers and those with threatened uremia. One might also well add that the procedure need certainly not be carried out as a routine and need not be employed when the diagnosis of gallbladder disease is established beyond question without its use.

While this review has pointed out weaknesses in the book, this is done only because no review of this work could fail to emphasize the exceptionally great merits of the work as a whole. The book must be recognized as the greatest contribution to our knowledge of diseases of gallbladder and bile ducts that has appeared in many years. It contains an enormous amount of exceedingly valuable information and should be in the hands of every one who has to deal with patients suffering from diseases of these organs—surgeons, roentgenologists and internists alike. It is a most practical treatise and will take its place with the classics of medicine.

THE FUNDAMENTALS OF HUMAN MOTIVATION. By Leonard T. Troland, S.B., A.M., Ph.D., Assistant Professor of Psychology, Harvard University. Cloth. Price, $5. Pp. 521. New York: D. Van Nostrand Company, Inc., 1928.

In this book the author offers to the general reader a consideration of modern psychology of unusual merit. He concerns himself primarily with the reasons for human action, but he introduces his discussion with a survey of the history of psychology and of modern theories, which is useful to the reader who wishes to have these facts accurately in brief presentation. This general consideration is followed by a review of the application of psychology to everyday life, with an attempt to understand mental phenomena. The author recognizes that erotic and ego complexes form the most powerful motivational systems in the normal adult human being. He is able, therefore, to correlate his consideration with the views of both Freud and Adler, and to define human types on the basis of mental response. The book is planned primarily for the intelligent and perhaps well educated reader, since the author has been unable to separate his consideration from terminology inherent to modern psychologic thought. The physician who wishes to orient himself in this field should find this book a useful aid.

A TREATISE ON PHARMACEUTICAL CHEMISTRY EMBRACING CERTAIN SPECIAL TOPICS OF ANALYTICAL, ORGANIC AND PHYSICAL CHEMISTRY AS THEY ARE RELATED TO PHARMACY. By John C. Krantz, Jr., Ph.D., Director of Pharmaceutical Research, Sharp and Dohme. Cloth. Price, $3.50. Pp. 282, with 25 illustrations. St. Louis: C. V. Mosby Company, 1928.

The purpose of this work, as stated in the preface, is to bring to the attention of the student of pharmaceutic chemistry certain special topics in gravimetric and electrometric analysis and organic and physical chemistry in such a manner as to enable him to attempt to solve his various problems. With this in mind, the author has attempted to make a judicious selection of subjects. The subject matter is divided into three parts, quantitative, organic and physical chemistry. The first part contains an introductory chapter on the scope of quantitative analysis, gravimetric determinations of the chloride ion, theoretical consideration of precipitation, determination of the sulphate ion, magnesium and phosphorus, calcium, the heavy metals, and electrometric determinations, including the electrolytic determination of the U. S. Pharmacopeia. The second part covers the organic classification, a concise description of hypnotics, local anesthetics, antipyretics, bactericides and endocrines. The third part includes physical chemistry, chapters on ionization, the use of indicators and buffer solutions, equilibriums and colloidal substances. The analytic procedures described in the book are carefully explained, particular attention being given to the pharmaceutic application of each test and the method employed. In the chemical description of certain products several errors are noted; for instance, the odd formula for procaine borate (Borocaine) as given by Copeland and Notton is still retained; Allonal is incorrectly described as isopropylallylmalonylurea, although it is a mixture of isopropylallylmalonylurea (iso-propylallyl barbital) and amidopyrine; at times, trade names are given in preference to the official U. S. Pharmacopeia names. Furthermore, several prominent barbituric acid derivatives and bismuth preparations have not been mentioned. It is unfortunate that the author does not refer more often to the newer additions of importance to materia medica as appear in such works as New and Nonofficial Remedies, though it is evident that this book has been consulted in preparing certain parts of the text. If reference had been made to it, however, the student would have been benefited by having been made familiar with this excellent source of reference for truly modern pharmaceutics. Furthermore, the author has fallen into the pitfall, experienced by other pharmaceutic writers, of putting unduly personal therapeutic uses and recommendations into a text primarily intended for pharmaceutic chemists. The follow-

ing illustration is apt: "In conjunction with certain clinicians of Baltimore, the author has found a combination of ephedrine and vitamin B useful in the treatment of neurasthenia." It is hoped that the text is revised soon; a second edition thus revised would be a most valuable asset to a book-shelf of pharmaceutic-chemical treatises. The tendency of the book to cause the student to think in terms of modern chemistry is most commendable.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE MIT BERÜCKSICHTIGUNG DER EXPERIMENTELLEN PHARMAKOLOGIE. Herausgegeben von A. Bethe, G. v. Bergmann, G. Embden und A. Ellinger. Band VI, 1 Hälfte: Blut und Lymphe. 1 Teil: Blut. Von E. Adler, A. Alder, G. Barkan, R. Brinkman, usw., usw. Paper. Price, 58 marks. Pp. 665, with 74 illustrations. Berlin: Julius Springer, 1928.

Fourteen contributors assume responsibility for this volume of the Handbook, on blood. Besides discussing the formed elements of the blood and the red coloring matter, there are sections on carbon monoxide hemoglobin, other hemoglobin derivatives, plasma and serum, blood coagulation, pathologic physiology of the hemorrhagic diatheses, blood gases, specific gravity of the blood, refractometric examination of the blood, hemolysis, osmotic pressure of the blood, the hemoglobinurias, hydrogen ion measurements of the blood, blood viscosity, permeability of the erythrocytes, cataphoresis, and agglutination of the erythrocytes. The presentation of the various sections conforms to the high standard set by the authors of the volumes already published. As a modern reference book it should be on the shelves of every biologic and medical library. Omissions of references to important work are evident. For example, reference is not made to Barbour's method of determining specific gravity of the blood or to Mills' researches on its coagulation. However, the research man and the clinician will find the volume a valuable working tool.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

THE NORMAL AND PATHOLOGICAL PHYSIOLOGY OF BONE: Its Problems. By R. Leriche, professor de clinique chirurgicale a la Faculté de Strasbourg, and A. Policard, professor d'histologie a la Faculté de Lyon. Translated by Sherwood Moore, M.D., Professor of Radiology, Washington University School of Medicine, and J. Albert Key, M.D., Assistant Professor of Clinical Orthopedic Surgery, Washington University School of Medicine. Cloth. Price, $5. Pp. 236, with 33 illustrations. St. Louis: C. V. Mosby Company, 1928.

American translation of small French monograph presenting recent advances in this field.

REGIONAL ANESTHESIA: ITS TECHNIC AND CLINICAL APPLICATION. By Gaston Labat, M.D., Laureate of the Faculty of Science, University of Montpellier, France. With a foreword by William J. Mayo, M.D. Second edition. Cloth. Price, $7.50. Pp. 567, with 367 illustrations. Philadelphia: W. B. Saunders Company, 1928.

New edition of recognized textbook on technic of local anesthesia.

THE ELEMENTS OF THE SCIENCE OF NUTRITION. By Graham Lusk, Ph.D., Sc.D., LL.D., Professor of Physiology at the Cornell University Medical College, New York City. Fourth edition. Cloth. Price, $7 net. Pp. 844, with 46 illustrations. Philadelphia: W. B. Saunders Company, 1928.

New edition of masterly work in this field by American master.

EVERYDAY COURAGE. What Few Use Everyday, What All Need Everyday and What Everybody Wants Everyday. Collected and Arranged by S. DeWitt Clough. Paper. Price, $1. Pp. 96. Chicago: S. DeWitt Clough & Son, 1928.

Collection of expressions by the noted and by the notorious on the subject of courage.

THE TREATMENT OF DIABETES MELLITUS. By Elliott P. Joslin, M.D., M.A., Clinical Professor of Medicine, Harvard Medical School. Fourth edition. Cloth. Price, $9 net. Pp. 998, with 38 illustrations. Philadelphia: Lea & Febiger, 1928.

New and revised edition of classic American work in this field.

KEEPING MENTALLY FIT. A Guide to Everyday Psychology. By Joseph Jastrow, Ph.D., LL.D. Cloth. Price, $3.50. Pp. 297. New York: Greenberg, 1928.

Collection of syndicated popular guides to psychologic knowledge.

FRÜHDIAGNOSE DER LUNGENTUBERKULOSE DES ERWACHSENEN. Von Dr. Hanns Alexander, leit. Arzt des Sanatoriums Agra (Tessin). Fourth edition. Paper. Price, 4.50 marks. Pp. 50, with illustrations. Leipzig: Curt Kabitzsch, 1928.

Monograph on early diagnosis of tuberculosis.

UROLOGY. By Edward L. Keyes, M.D., Ph.D., F.A.C.S., Professor of Urology, Cornell University Medical College. Third edition. Cloth. Price, $10. Pp. 761, with 204 illustrations. New York: D. Appleton & Company, 1928.

New edition of well established textbook.

A HISTORY OF PATHOLOGY. By Esmond R. Long, Ph.D., M.D., Professor of Pathology, University of Chicago. Cloth. Price, $5. Pp. 291, with illustrations. Baltimore: Williams & Wilkins Company, 1928.

Well written and sympathetic survey of contributors to our knowledge of the changes wrought by disease.

DIE EPIDEMISCHE ENCEPHALITIS. Von Professor Dr. med. Felix Stern, Nervenarzt in Kassel. Second edition. Paper. Price, 56 marks. Pp. 541, with 71 illustrations. Berlin: Julius Springer, 1928.

Encyclopedic compilation of knowledge of the newest nervous disease epidemic.

EXPLORING YOUR MIND WITH THE PSYCHOLOGISTS. By Albert Edward Wiggam. Cloth. Price, $3.50. Pp. 419, with illustrations. Indianapolis: Bobbs-Merrill Company, 1928.

Popularization of psychologic investigations by an experienced popularizer.

SERIOUS SYMPTOMS IN CHRONIC HEART DISEASE. By Harrington Bennett Munroe, M.D. Cloth. Price, $2. Pp. 80. Los Angeles: Frederick G. Andrews Press, 1928.

Brief analysis aiming at prevention of death through early recognition of symptoms.

THE NEW DAY IN HOUSING. By Louis H. Pink. With an introduction by Alfred E. Smith, Governor of New York. Price, $3.50 net. Pp. 208, with illustrations. New York: John Day Company, 1928.

Expression of foreign efforts to organize the housing problem.

CONSECRATIO MEDICI AND OTHER PAPERS. By Harvey Cushing, M.D., Surgeon in Chief of the Peter Bent Brigham Hospital. Cloth. Price, $2.50 net. Pp. 276. Boston: Little, Brown & Company, 1928.

Collected essays of a philosophical surgeon on various topics.

JAHRESVERZEICHNIS DER AN DEN DEUTSCHEN UNIVERSITÄTEN UND HOCHSCHULEN ERSCHIENENEN SCHRIFTEN. 42-1926. Paper. Pp. 1023. Berlin: Preussische Staatsbibliothek, 1928.

Index of articles published by faculties of German universities.

THE RESPIRATORY FUNCTION OF THE BLOOD. Part II: Hæmoglobin. By Joseph Barcroft. Cloth. Price, 12s. 6d. net. Pp. 200, with 63 illustrations. Cambridge: University Press, 1928.

Monograph on intimate physiology of the blood.

SOME MORE MEDICAL VIEWS ON BIRTH CONTROL. Edited by Norman Haire, Ch.M., M.B. Cloth. Price, $2.50. Pp. 216. New York: E. P. Dutton & Company, Inc., 1928.

Medical opinion of a sociological question.

THE BELLEVUE-YORKVILLE HEALTH DEMONSTRATION, NEW YORK CITY. Vital Statistics of the Bellevue-Yorkville District, Years 1925, 1926, and Five-Year Period 1922 to 1926. A Reference Handbook on the Principal Causes of Mortality During the Pre-Demonstration Period. By the Statistical Division of the Bellevue-Yorkville Health Demonstration. In cooperation with the Bureau of Records of the New York City Department of Health. Paper. Pp. 51. New York: Bellevue-Yorkville Health Demonstration, 1928.

PRAKTISCHE DIFFERENTIALDIAGNOSTIK FÜR ÄRZTE UND STUDIERENDE. Herausgegeben von Professor Dr. Georg Honigmann. Band I: Innere Medizin. Teil 4: Differentialdiagnostik der Erkrankungen der Verdauungsorgane. Von Prof. Dr. Louis R. Grote, Chefarzt von Dr. Lahmanns Sanatorium Weisser Hirsch-Dresden. Paper. Price, 6.80 marks. Pp. 213-330, with 5 illustrations. Dresden: Theodor Steinkopff, 1928.

NEUROLOGICAL EXAMINATION. An Exposition of Tests with Interpretation of Signs and Symptoms. By Charles A. McKendree, A.B., M.D., Associate, Department of Neurology, College of Physicians and Surgeons, Columbia University. With a foreword by Henry Alsop Riley, A.M., M.D. Cloth. Price, $3.25 net. Pp. 280, with 88 illustrations. Philadelphia: W. B. Saunders Company, 1928.

STRÜMPELL-SEYFARTH LEHRBUCH DER SPEZIELLEN PATHOLOGIE UND THERAPIE DER INNEREN KRANKHEITEN. Für Studierende und Ärzte. Band II. Von Dr. Med. et Phil. Carly Seyfarth, a. o. Professor für

innere Medizin an der Universität Leipzig. Twenty-seventh edition. Paper. Price, 25 marks. Pp. 989, with 218 illustrations. Leipzig: F. C. W. Vogel, 1928.

ANNUAL REPORT OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION SHOWING THE OPERATIONS, EXPENDITURES, AND CONDITION OF THE INSTITUTION FOR THE YEAR ENDING JUNE 30, 1927. Cloth. Price, $1.75. Pp. 580, with illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1928.

SUICIDES IN SEATTLE, 1914 TO 1925: An Ecological and Behavioristic Study. By Calvin F. Schmid. University of Washington Publications in the Social Sciences. Vol. V, No. 1, 1-94, October, 1928. Paper. Price, $1. Pp. 93, with 10 illustrations. Seattle: University of Washington Press, 1928.

PRIMEIRO CONGRESSO BRASILEIRO DE HYGIENE. Rio de Janeiro 1 a 7 de Outubro de 1923. Volume II: Trabalhos avulsos—Themas para os directores de saúde publica dos estados conferencias—Sessão de encerramento. Paper. Pp. 247. Rio de Janeiro, 1927.

TRANSACTIONS OF THE SOUTHERN SURGICAL ASSOCIATION. Volume XL. Fortieth Annual Meeting, 1927. Edited by Robert L. Payne, M.D. Cloth. Pp. 490, with illustrations. Southern Surgical Association, 1928.

ANNUARIO DO MINISTERIO DA AGRICULTURA, INDUSTRIA E COMMERCIO, 1928. (Publicado pelo servico de informacões.) Paper. Pp. 558, with illustrations. Rio de Janeiro, 1928.

LA PSICOINERVACION TERAPEUTICA PSIQUICA. Estudio de la accion psiquica sobre las funciones vitales. Por James Mapelli. Paper. Pp. 243. Buenos Aires: El Ateneo, 1928.

THE TREATMENT OF NARCOTIC EDUCATION IN SCHOOL TEXT BOOKS. A Survey. By Gertrude Robinson. Paper. New York: World Narcotic Defense Association, 1928.

STATISTICAL REPORT OF THE HEALTH OF THE NAVY FOR THE YEAR 1926. Paper. Price, 4s. 6d. net. Pp. 149. London: His Majesty's Stationery Office, 1928.

THIRD REPORT OF COMMISSION ON MEDICAL EDUCATION, OCTOBER, 1928. Paper. Pp. 70. New Haven: Commission on Medical Education, 1928.

THE MEDICAL RECORD VISITING LIST OR PHYSICIANS' DIARY FOR 1929. Leather. Price, $2 net. New York: William Wood & Company, 1928.

Medicolegal

Surgeon's Liability for Neglect of Hospital Employee

(Hardy v. Meadows et al. (Utah), 264 P. 968)

Dr. Hubbard, assisted by Dr. K. and others, performed an appendectomy on defendant Meadows. Subsequently he assigned to the plaintiff, Hardy, who operated a collection agency, his claim amounting to $125 for the professional services rendered Meadows. Hardy instituted suit against Meadows in the city court of Salt Lake City to recover the claim. Meadows obtained an order of the city court to interplead Dr. Hubbard and filed a counterclaim whereby he sought to recover $5,750 for damages which he alleged he sustained in the performance of the operation through Dr. Hubbard's negligence in permitting or causing an acid or other poisonous drug, or some heated object, to come in contact with his leg while he was under the influence of an anesthetic.

Counsel for Dr. Hubbard contended that the city court had no jurisdiction of the counterclaim since by statute its civil jurisdiction was limited to cases in which the damages claimed were less than $1,000. This contention was overruled by the city court, apparently by reason of an alleged agreement between counsel that Meadows would be permitted to file the counterclaim if he would withdraw another suit against Dr. Hubbard, which he had instituted in another county, which involved the same claims for damages. From a judgment of the city court of $874.99 entered against him, Dr. Hubbard appealed to the district court of Salt Lake County. In that court judgment was rendered in favor of Hardy and against Meadows in the sum of $125 and in favor of Meadows and against Dr. Hubbard in the sum of $1,000. Dr. Hubbard appealed to the supreme court of Utah.

The supreme court held that since the city court, under the statute, did not have any jurisdiction over the counterclaim, jurisdiction could not be conferred by consent, and that since the city court did not have any jurisdiction, the district court did not by appeal acquire any, even though the district court might have had jurisdiction had the case been originally instituted there instead of in the city court. The supreme court further said that even though it were in error on the jurisdictional question, the judgment against Dr. Hubbard could not be sustained on the evidence. The trial court charged the jury that if the injury occurred in the hospital room to which the patient was taken after operation, and by reason of a hot instrumentality under the control of the hospital, then Dr. Hubbard could not be held liable. The trial court further instructed the jury that if there was no evidence that Dr. Hubbard had any supervision over the hospital or its agents, and if the injury was caused by negligence of the hospital's agents, then Dr. Hubbard would not be liable. The evidence showed that after the operation, and after Meadows was removed to a room in the hospital, his leg came in contact with a heated radiator near the bed as he was coming out of the anesthesia. The supreme court held that the verdict rendered by the jury on the counterclaim was against both the evidence and the charge and was therefore reversed.

When Doctrine of "Res Ipsa Loquitur" Applies

(Whitmore v. Herrick (Iowa), 218 N. W. 335)

The defendant, Herrick, treated a callosity on the plaintiff's foot by thirteen applications of roentgen rays, between February 2 and October 15. After the eleventh application, August 31, an erythema developed, the foot became swollen and painful, and by September 5 the affected part was purple for three-fourths inch around the callus and there was an enlargement above the ankle. In two more weeks an abscess developed and amputation was threatened. The plaintiff brought suit, contending that her condition was produced by the application of the roentgen rays. The defendant contended that it was due to an infection under the callus. The plaintiff's declaration consisted of three counts. The first count did not contain any allegation of negligence. The second and third counts specifically charged carelessness and wrongful conduct. The trial court allowed the jury to consider only the counts that asserted lack of care. It refused to allow any relief based on the first count, on the ground that that count did not give rise to the doctrine of res ipsa loquitur and that, in view of that fact, it did not embody any accusation of wrongdoing. A verdict was rendered in favor of the defendant, and the plaintiff appealed to the Iowa supreme court. There he, as appellant, argued that the doctrine of res ipsa loquitur does apply in a contest between a patient and a physician based on alleged malpractice. The court, however, found it unnecessary to pass on this point. It quoted the statement of the doctrine of res ipsa loquitur set forth in 20 Ruling Case Law, pp. 185 and 187, section 156:

> More precisely the doctrine res ipsa loquitur asserts that whenever a thing which produced an injury is shown to have been under the control and management of the defendant, and the occurrence is such as in the ordinary course of events does not happen if due care has been exercised, the fact of injury itself will be deemed to afford sufficient evidence to support a recovery in the absence of any explanation by the defendant tending to show that the injury was not due to his want of care.

The court pointed out that negligence was the very gist of the present action and that the plaintiff, in order to recover, must plead and prove it. The first count, however, did not allege negligence. In the absence of an allegation of negligence, the doctrine of res ipsa loquitur does not come into play to justify an inference aiding in the proof of the defendant's liability. Res ipsa loquitur does not relieve the pleader of the burden of "allegation," even though it helps him on the "proof," by permitting the inference that because of the facts "negligence" must have occurred. The court pointed out, however, that the doctrine of res ipsa loquitur is available only when there is a general allegation of negligence or want of care; if specific allegations of negligence have been made, specific proof must be made of the negligence alleged.

As to another supposed error on the part of the trial court, the plaintiff pointed out that a physician who testified for the defendant was permitted to give certain testimony over the plaintiff's objection that the testimony was a privileged communication. The witness had attended the plaintiff after the defendant had treated her, and he testified concerning the con-

dition of her foot. The court held, however, that the plaintiff had waived her privilege with respect to his testimony. A physician is not absolutely disqualified from testifying. A patient can obtain medical aid without the betrayal of his confidence, but he may waive this privilege of secrecy by calling the physician to testify as to privileged matters or by calling other witnesses, as the plaintiff had done, to testify to the same facts. The judgment of the court of appeals in favor of the defendant was affirmed.

Sulphuric Acid Burns as Mayhem; "Poison" Defined

(Hiller v. State (Neb.), 218 N. W. 386)

The accused, Hiller, was convicted in the district court, Dawson County, of mayhem and appealed to the supreme court of Nebraska. Mayhem was alleged to have been committed by the throwing of sulphuric acid on the legs of one Mary Ashley with intent to maim and disfigure her. Dr. S., who treated the injured girl, testified that there were burns on her leg produced by the acid; that the outer skin was charred, and that he had been compelled to cut out a part of the disintegrated tissue; that the skin which covered the scar was a very delicate tissue and did not have the resisting qualities of natural skin; that any injury would be apt to break it down; that poor circulation later in life would do so, and that if this tissue broke down it would result in a running sore. He testified that one scar was taking on a connective tissue growth, known as a keloid growth, which "continues to grow and sometimes requires x-ray treatment to clear up, and requires the cutting out of the scarred tissues." The accused contended that section 9459, Compiled Statutes of Nebraska, 1922, in prescribing a penalty for mayhem, describes a crime that must deprive the injured person of his members or render him less able in fighting; that the injury must always be a permanent injury, and that the evidence in the case did not warrant a conviction of the crime as described in the statute. The supreme court held that under the facts stated the trial court was justified in instructing the jury on mayhem and warranted in submitting to the jury whether the facts showed that the leg would be disabled, maimed and disfigured. The accused further objected to an instruction given by the trial court because it contained the word "poison," in referring to the throwing of the acid. It was contended that this use of the word "poison" was prejudicial to the accused because it was not mentioned in the charge against him or in the evidence. To this objection the supreme court said:

> Poison may well be defined as any substance which when introduced into the system, either directly or by absorption, produces violent morbid or fatal changes or which destroys living tissue with which it comes in contact. Such definition clearly includes sulphuric acid because of the effects which it produces upon the human flesh, and the defendant was not prejudiced by the introduction of the word "poison" into the seventh instruction by the court, in the place of the words "sulphuric acid."

For the reasons stated, the supreme court affirmed the judgment of the trial court.

Death Accelerated by Preexisting Disease

(U. S. Cast Iron Pipe & Foundry Co. v. Hartley et al. (Ala.), 116 So. 666)

This case arose under the workmen's compensation act of Alabama, brought by the minor children of the deceased, a former employee of the appellants. The deceased was injured while in the appellant's employ. Death resulted. According to the medical testimony offered, the injuries suffered by the deceased would have healed in eight or nine weeks had it not been for a preexisting nephritis. The minor children were awarded $15 for a period of 300 weeks, and the appellants appealed. It was contended on behalf of the appellants that the compensation allowed was excessive and that it should be abated in the proportion that the preexisting disease contributed to the death of the workman. This contention was predicated on the following provisions of the code of Alabama:

> If the degree or duration of disability resulting from an accident is increased or prolonged because of a preexisting injury or infirmity the employer shall be liable only for the disability that would have resulted from the accident had the earlier injury or infirmity not existed.

The supreme court of Alabama, in affirming the amount of compensation awarded, held that the provisions of the code quoted apply only to disability, not to death. Death, the court said, in the sense dealt with in the workmen's compensation act can neither be increased nor prolonged. The court then quoted from Schneider on Workmen's Compensation **1**:312, as follows:

> Where an employee afflicted with disease receives a personal injury under such circumstances as that he may have appealed to the act for relief on account of the injury had there been no disease involved, but the disease as it in fact exists is by the injury materially aggravated or accelerated, resulting in disability or death earlier than would have otherwise occurred, and the disability or death does not result from the disease alone . . . but the injury aggravates and accelerates its progress, materially contributes to hasten its culmination in disability or death, there may be an award under the compensation acts.

Cross-Examination of Experts from Books

(Chezik v. Minneapolis, St. P. & S. S. M. Ry. Co. (N. D.), 218 N. W. 217)

The plaintiff jumped from an automobile to avoid injury from a collision with a freight train of the defendant. She did not sustain any perceptible immediate harm, but two months later she was delivered of a dead fetus. In an action based on alleged personal injuries sustained and impairment of health, the jury returned a verdict for the defendant, from which the plaintiff appealed. A physician, as an expert for the plaintiff, testified that in his opinion the death of the fetus was caused by the injury received at the time of the accident. On cross-examination, he said he based his opinion on knowledge obtained from De Lee's book on the Principles and Practice of Obstetrics and from other works, and on experience. In the subsequent course of cross-examination, extracts from the book named were read to the witness as the basis of questions propounded to him. To this the plaintiff objected on the ground that it indirectly placed before the jury the unsworn opinion of an author without possible opportunity to cross-examine him. In affirming the judgment, however, the supreme court of North Dakota held that it is proper to cross-examine an expert witness with reference to data which form in whole or in part the basis of an opinion expressed by him; and when a particular authority had been relied on by the witness, it is proper to test his knowledge and the accuracy of his deductions by drawing his attention during cross-examination to the expressions of that particular authority. This is not permitted for the purpose of using the selected extracts as evidence but to enable the jury to weigh better the testimony of the expert. The cross-examination in this case was clearly proper. Judgment of the court below was affirmed.

Medical Expense as Part of Damages

(Chapman v. Powers (Miss.), 116 So. 609)

This was a suit for personal injuries. The trial resulted in a verdict for the plaintiff for $500, from which she appealed to the supreme court of Mississippi, alleging among other things error on the part of the trial court in refusing to permit her to show the amount expended by her in physicians' fees, necessitated by her injury. The supreme court sustained the ruling of the trial court, holding that, in order to recover medical expenses in personal injury cases, such expenses must be specially pleaded so as to inform the defendant of at least the maximum amount to be claimed. This the plaintiff failed to do in this case. In reaching its decision, the supreme court cited the general rule as laid down in 17 Corpus Juris 1018:

> In perhaps the greater number of jurisdictions it is essential to the admissibility of proof of payment or incurrence of doctor's bills occasioned by personal injury that these facts be specially alleged. . . . The precise amount expended need not be alleged; an allegation of expense for medical attendance is sufficient, at least in the absence of a motion to make more specific, or a special demurrer, nor need the day or place at which the services were rendered be averred.

The verdict of the lower court was therefore affirmed.

Society Proceedings

COMING MEETINGS

District of Columbia, Medical Society of, Washington, January 2. Dr. C. B. Conklin, 1718 M Street, N. W., Washington, Secretary.

Society of American Bacteriologists, Richmond, Va., December 27-29. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

4: 1-126 (Oct.) 1928

*Myocarditis. B. J. Clawson, Minneapolis.—p. 1.
*Relation of Suprarenals to Circulatory Collapse of Diphtheria. C. W. Edmunds and F. D. Johnston, Ann Arbor, Mich.—p. 16.
*Paroxysmal Ventricular Tachycardia with Alternating Complexes Due to Digitalis Intoxication. H. M. Marvin, New Haven, Conn.—p. 21.
*Compression and Displacement of Bronchi in Mitral Stenosis. J. M. Steele, Jr., Chicago.—p. 53.
*Extracardial Nerves: III. Relation to Heart Block. H. L. Otto, New York.—p. 59.
Id.: IV. Coronary Obstruction. H. L. Otto, New York.—p. 64.
Abnormally Long Papillary Muscles of Human Heart. W. M. Yater, Rochester, Minn.—p. 72.
Relation of Weight of Heart to Weight of Body and of Weight of Heart to Age. H. L. Smith, Rochester, Minn.—p. 79.
Mortality of Heart Disease in New York State. R. H. Halsey, New York.—p. 94.
*Heart Failure and Hyperthyroidism: Etiology. L. M. Hurxthal, Boston.—p. 103.
Distortion of Electrocardiogram by Capacitance: Electrical Amplification of Heart Currents. W. Dock, San Francisco.—p. 109.
Use of Fahnestock Clips in Technic of Taking Electrocardiograms. H. J. Stewart, New York.—p. 113.

Myocarditis and Heart Failure.—A detailed study of the myocardium was made by Clawson in 429 cases of cardiac failure. He found that myocarditis, acute or chronic, arranged diffusely or in localized areas as Aschoff nodules or abscesses, is a common condition in the myocardium in acute and recurrent rheumatic endocarditis, in subacute bacterial endocarditis, and in old valve defects. Proliferative or exudative inflammation is rare in the myocardium in cases of syphilitic aortitis. Scars resulting from atrophy of muscle with replacement by connective tissue following a narrowing of the coronary arteries seldom occur except in the myocardium in cases of hypertension and coronary sclerosis. The extent of myocardial injury as shown by anatomic changes rarely appears to be sufficient to bring about cardiac failure. The conditions usually diagnosed as acute or chronic myocarditis clinically cannot be demonstrated to be inflammatory processes and in most cases anatomic injuries are not seen. So-called myocarditis is usually a condition of the myocardium, probably fatigue, which is not manifested anatomically.

Relation of Suprarenals to Circulatory Collapse in Diphtheria.—Edmunds and Johnston conclude that although there is a marked diminution in the amount of epinephrine in the suprarenals in diphtheria, this decrease is probably not the cause of the circulatory collapse.

Paroxysmal Ventricular Tachycardia Due to Digitalis.—Five cases are reported by Marvin in which there occurred paroxysms of tachycardia of a most unusual kind. These paroxysms consisted of regularly alternating upward and downward ventricular complexes. Only five similar examples have been recorded previously. Reasons are given for believing that the paroxysms are due to ectopic beats arising alternately within the right and left ventricles; the possibility that circus movement in the ventricles may be responsible for this abnormal mechanism is briefly discussed. In all of the recorded cases, this curious ventricular tachycardia seems to have occurred as a result of excessive doses of digitalis, although the usual symptoms of intoxication were entirely absent.

Compression of Bronchi in Mitral Stenosis.—In Steele's case there was no evidence of bronchiectasis by roentgen examination, but the bronchial tree was outlined, and the compression and displacement of the left main bronchus were apparent. This explained the persistence of the expectoration of sputum and of the abnormal pulmonary signs at the left base alone.

Relation of Extracardial Nerves to Heart Block.—Otto found the effect of accelerator nerve stimulation on the ventricular rate in complete block to be insignificant, although its action on the form of the electrocardiogram is marked. Epinephrine administered in the presence of experimental block caused ventricular fibrillation. There is a relation between the effect of stimulation of the right vagus nerve, the preautomatic pause of the ventricles and the duration of life of the heart after accelerator nerve section. The tonic activity of the sympathetic nerve fibers contained in the vagus trunk was insufficient to support the circulation in the presence of accelerator nerve section, although stimulation of these fibers did so. Section of the nervi rami communicantes, eighth cervical, first, second and third dorsal, has the same effect as the removal of the stellate ganglions.

Heart Failure and Hyperthyroidism.—Of the 500 cases of hyperthyroidism analyzed by Hurxthal, 479 were of the exophthalmic type and twenty-one were of the toxic adenomatous type. In 339 of these cases no change was found in the heart. Changes found in the remaining 161 cases were: paroxysmal auricular fibrillation; probable rheumatic heart; rheumatic heart; established auricular fibrillation; transient congestive failure; hypertensive heart; cardiac hypertrophy; angina pectoris; paroxysmal tachycardia; auricular flutter, and congestive heart failure. The author considers the most significant causes of congestive heart failure in hyperthyroidism: (1) age and the coexisting cardiovascular changes associated with it; (2) the specific heart drive incited by thyrotoxicosis; (3) auricular fibrillation, and (4) duration and intensity of thyroid overactivity.

Annals of Surgery, Philadelphia

88: 801-960 (Nov.) 1928

*Suppurative Pericarditis from Surgical Viewpoint. E. G. Alexander, Philadelphia.—p. 801.
Pulmonary Abscess: Experimental Study. C. A. Hedblom, M. Joannides and S. Rosenthal, Chicago.—p. 823.
*Vasomotor and Reflex Sequelae of Unilateral Cervical and Lumbar Ramisectomy in Case of Raynaud's Disease. J. F. Fulton, Brookline, Mass.—p. 827.
Results of Delay in Treatment of Breast Cancer. W. J. Potts, Oak Park, Ill.—p. 842.
*Hemorrhagic Diathesis of Obstructive Jaundice: Treatment. O. H. Wangensteen, Minneapolis.—p. 845.
*Benign Tumors of Stomach. J. T. Mason and M. F. Dwyer, Seattle.—p. 866.
*Fascial Sutures for Inguinal Hernia. H. H. M. Lyle, New York.—p. 870.
Purely Fascial Herniotomy. E. Andrews, Chicago.—p. 874.
*Internal Fixation of Fractures and Dislocations by Use of Human Fascial Suture. R. H. Patterson, New York.—p. 879.
Ainhum: Case. J. G. Probstein, St. Louis.—p. 885.
*Fractures of Skull: 520 Cases. J. A. McCreery and F. B. Berry, New York.—p. 890.
Fracture of Neck of Femur in Childhood: Six Cases. P. C. Colonna, New York.—p. 902.

Pericardotomy for Suppurative Pericarditis.—Alexander has performed pericardotomy for suppurative pericarditis successfully in two out of three cases, and a fourth time by mistake in a case of cardiac decompensation from valvular disease. This brings the total number of cases of suppurative pericarditis on record to 126, with seventy-one recoveries and fifty-five deaths.

Ramisectomy in Raynaud's Disease.—A case of Raynaud's disease is described by Fulton in which ischemic symptoms of the four extremities were equally advanced on the two sides of the body. A right-sided cervical and lumbar ramisectomy was carried out, and immediately after the operation all deep reflexes, which before had been equal, were markedly depressed on the side operated on. In the right lower extremity the pulse became more full and the right foot was 3 degrees C. warmer than the left. There was also a right-sided Horner's syndrome. The patient has been followed for a year and the altered reflexes, Horner's syndrome and thermal differences have persisted during that period. She has not had any further symptoms of ischemia in her right foot, but her right hand was not obviously benefited by the operation. There has also been a permanent and well marked diminution of the resting tonus of the right lower extremity since the operation.

Hemorrhagic Diathesis of Obstructive Jaundice.—The histories of two patients not operated on who died of sponta-

neous hemorrhages due to biliary obstruction are reviewed by Wangensteen. Another case is recorded in which fatal bleeding followed the excision of a stricture and reconstruction of the common bile duct. A fourth patient almost lost his life through the agency of parenchymatous hemorrhage, when no dyscrasia of coagulation could be demonstrated preoperatively. It is pointed out that the retention of bile in the organism per se is probably not responsible for the hemorrhagic diathesis of obstructive jaundice. The destruction of liver tissue and the diminution of liver function consequent on the biliary obstruction would appear to be the chief etiologic factors. The tendency to bleed exhibited by patients with obstructive jaundice does not depend on delay in the extravascular clotting of the blood alone. The blood vessels as well as the blood itself in this respect are abnormal. The important principle in the avoidance of hemorrhage lies in the early relief of biliary obstruction. In the reduction of delayed coagulability, the intravenous injection of calcium chloride is the most dependable agent. In the treatment of parenchymatous hemorrhage, after operation, the transfusion of unmodified blood is of most value. In instances of unremitting jaundice in which the delayed clotting remains refractory to all the conservative methods of reduction in the absence of other contraindications, biliary decompression should be done at once. Hemorrhage following operation for the relief of biliary obstruction is still an important cause of operative mortality.

Benign Tumors of Stomach.—Three cases of benign tumors of the stomach are reported by Mason and Dwyer. All three patients complained of weakness, anemia and loss of weight but none attributed their ill health to a lesion in the stomach. Diarrhea was very persistent in one case and was practically the sole complaint. The most important means in the diagnosis of these cases was the roentgenologic examination. All the tumors found in these three cases were located on the posterior wall of the stomach.

Fascial Sutures for Inguinal Hernia.—The fascial suture has been employed by Lyle in 335 patients with hernia, 159 of whom have been followed for from eighteen months to five and one-half years. In 101 operations for indirect hernias there were three recurrences, or 3 per cent. In fifty-four operations for direct hernias there were five recurrences, or 9.5 per cent. In four operations for direct indirect hernias there were no recurrences. That is, in a total of 159 cases there were eight recurrences, or 5 per cent. During the same period 271 hernias were repaired by catgut. In 200 indirect hernias, there were eighteen recurrences, or 9 per cent, and in seventy-one direct hernias there were ten recurrences, or 14 per cent. In other words, with catgut suture there was 10.3 per cent recurrence and with fascial sutures, 5 per cent. There were five infections of the hernial wounds in 150 cases, or 3.1 per cent, and one infection occurred in the fascia of the thigh. Two of the recurrences can be directly charged to infection; the remaining three cases in which there was infection did not show any sign of recurrence. Of the eight recurrences after fascia suture, seven occurred in the Halstead modification of the Bassini operation, and one in the Bassini. Five occurred in direct hernias and three in indirect. There were no recurrences after the Gallie operation. Two of the cases can be charged directly to infection, a third to a mistake of judgment in employing the McArthur operation in a sliding hernia when the Gallie should have been used. In this case the hernia was subsequently repaired by the latter method and the suture has held. Of the five remaining patients four have been operated on, and three of these had recurrences of protrusion directly from the internal to the external ring. In these patients the cord had been brought anterior to the external oblique fascia. The musculature was firmly united to Poupart's ligament and the fascial sutures were in place.

Fascial Fixation of Fractures.—The fascial suture is recommended by Patterson as a method of internal fixation in certain bone and joint injuries. Dead sutures or "leftovers" from hernia operations may be used, and in one case these were as effective as the autogenous sutures.

Analysis of 520 Cases of Skull Fracture.—McCreery and Berry conclude from their study that 50 per cent of these patients will eventually make a complete recovery, although final abatement of symptoms may not occur until from eighteen months to two years after the initial injury. Concerning the persisting symptoms and complaints there is no doubt that compensation and legal complications play a definite rôle. Of the permanent sequelae, vertigo is common but rarely more than an annoyance; headache is common and sometimes quite disabling. Deafness, tinnitus and disturbances of smell and taste are not uncommon, while there is a small group in which the final outcome, though not fatal, is distinctly unfortunate. This entire series of 520 cases has been treated with considerable conservatism and operation has been performed only when it has seemed to be specifically indicated. The authors have been impressed by the high mortality in the early hours, a mortality due in most part to cerebral concussion and not to be controlled by the means now at disposal. In the later hours more frequent use of lumbar punctures may be of value. Operation in the first twelve hours, with the patient still in concussion, is of little value, aside from the toilet of compound fractures. The depressed fracture is not of itself an urgent indication, while the epidural hemorrhage, with its classic picture of unconsciousness, recovery and gradually developing coma, has in this series been a rarity. Early and repeated lumbar punctures seem to be the greatest aid.

Archives of Dermatology and Syphilology, Chicago

18: 647-808 (Nov.) 1928

*Affinities Between Black Tongue and Trichomycosis. F. D. Weidman, Philadelphia.—p. 647.

Structure of Fordyce's Disease as Demonstrated by Wax Reconstruction. S. O. Chambers, Los Angeles.—p. 666.

*Carate (Pinta) in Colombia, South America. H. Fox, New York.—p. 673.

Cryptococcosis Epidermica. C. J. White and J. H. Swartz, Boston.—p. 692.

Multiple Miliary Osteomas of Skin: Case. J. G. Hopkins, New York.—p. 706.

Pityriasis Rubra (Hebra). R. E. Barney, Cleveland.—p. 716.

Tinea of Nails as Source of Reinfection in Tinea of Feet. C. M. Williams, New York.—p. 730.

Blood Sugar Level in Some of Common Skin Disorders. J. E. Fisher, Cleveland.—p. 732.

*Hot Baths in Late Syphilis. M. W. Hollingsworth, Los Angeles.—p. 736.

Serologic Discord in Latent and Treated Syphilis: Cases. A. E. Sheplar, M. A. Lyons and W. J. MacNeal, New York.—p. 742.

Streptothrix of Black Tongue.—A streptothrix isolated by Weidman from a case of black tongue in a human being produced a brown pigment in culture, and was found heavily encasing many of the "hairs." Although attempts to reproduce the disease by feeding the organism to three monkeys failed, a brown trichomycosis was induced on one of the monkeys. Weidman feels that this streptothrix played some part in the symptom-complex, if not by inducing the hyperplasia at least to the extent of contributing to the pigmentation. The fact that the patient was diabetic lends some weight, because dextrose is notoriously favorable to the growth of fungus. The streptothrix which inhabited the tongue certainly was able to endure on the hairs of the monkey. It is recommended that "hairs" from future cases of black tongue be tested histologically for iron by the prussian blue technic, and that the employment of steel instruments in handling the original materials be avoided.

Carate: Yeast and Molds in Skin Scrapings.—Twenty of the fifty patients with carate observed by Fox in Santa Marta, Colombia, showed distinct evidence in some parts of the body of bluish pigmentation. In some cases the color was slatey-blue, in others, bluish black. Associated with pigmentation were various stages of depigmentation and a peculiar fine reticulation or mottling. The extremities were affected in every case. In thirteen cases, the face and neck were involved. In some cases the eruption was generalized and profuse. Itching was conspicuously absent in most cases and scaling was not a prominent feature. The hair, nails, mucous membranes, palms and soles were not affected. Most of the patients were adult males of mixed Indian and negro blood. Microscopic examinations for fungus were made from scrapings of thirty areas of the body in twenty-five cases of blue carate, including areas which were smooth or scaly, bluish or in various stages of depigmentation. In only one preparation was any fungus present (*Septate hyphae*). Cultures were made from scrapings of the skin of sixteen patients with blue carate. Seventy tubes of Sabouraud's isolation medium were inoculated and hanging drop preparations were made from all. Yeast was grown in four cases. Of the various molds, *Aspergillus* was found most fre-

quently (from nine areas); *Penicillium* and other higher fungi and unidentified trichophytons were grown in a dozen cases. Microscopic examination was made of five patients who showed diffuse and stippled bluish pigmentation, and partial and complete depigmentation. The observations common in all of the sections were vacuolization of the rete cells, absence of elastic fibers in the papillae and subpapillary region and pigmentary dystrophy, the process appearing to be mild inflammation. Micro-organisms were not found in any of the sections.

Inefficacy of Hot Baths in Syphilis.—Observations made by Hollingsworth failed to yield any clinical or laboratory evidence that the hot bath treatment of syphilis exterminated or appreciably vitiated spirochetes in any case. Although, in their own opinion, the patients felt an initial subjective improvement, it was soon apparent that the hot bath was exhausting, so much so, in fact, that Hollingsworth hesitated to extend the work further until the effect could be studied more completely.

Laryngoscope, St. Louis

38: 633-696 (Oct.) 1928

Special Sense Organs. M. A. Goldstein, St. Louis.—p. 633.
Ossification of Labyrinthine Capsule. T. H. Bast, Madison, Wis.—p. 665.
Flurry in Mastoids. L. R. Effler, Toledo.—p. 671.
Novel and Simple Method for Detection of Simulation of Unilateral Deafness. B. M. Becker, New York.—p. 677.
Agranulocytic Angina. W. C. Hueper and D. O'Connor, Chicago.—p. 679.
New Method of Determining Unilateral Deafness and Malingering. J. Guttman, New York.—p. 686.
Simplified Method for X-Ray Studies of Accessory Nasal Sinuses. H. C. Todd, Oklahoma City.—p. 688.

Medical Journal and Record, New York

128: 437-492 (Nov. 7) 1928

Early Diagnosis of Pulmonary Tuberculosis. E. M. Ellison, Washington, D. C.—p. 437.
Newer Methods in Diagnosis and Treatment of Diseases of Liver and Biliary Tract. J. S. Diamond, New York.—p. 440.
Intestinal (Protein) Intoxication: III. Treatment. H. J. Bartle, Philadelphia.—p. 446.
Diabetes: Pathogenesis and Treatment. W. H. Porter, New York.—p. 448.
Prerheumatic Child. C. W. Vining, Leeds, England.—p. 453.
Modern Morphology: Importance in Study of Disease. P. Rice, New York.—p. 455.
Geographic and Climatic Distribution of Rheumatic Fever. J. T. Clarke, Harrow, England.—p. 457.
Predisposing Factors in Rheumatic Infection in Childhood. A. D. Fordyce, Liverpool, England.—p. 460.
Bacterial Factor in Rheumatic Infection in Childhood. C. F. Coombs, Bristol, England.—p. 463.
Causation of Fibrositis and Panniculitis. R. Stockman, Glasgow, Scotland.—p. 466.
Sedimentation Rate of Erythrocytes in Various Rheumatic Conditions. G. Kahlmeter, Stockholm, Sweden.—p. 467.
Types of Rheumatic Disorders Most Prevalent in Holland. J. Van Breemen, Amsterdam, Holland.—p. 469.
Thomas Finger Splint. H. Milch, New York.—p. 473.
Improved Needle for Thoracic Puncture and Aspiration. H. Lowenburg, Philadelphia.—p. 473.
Medical Beliefs—New and Old. M. Ginsburg, Philadelphia.—p. 475.

Military Surgeon, Washington, D. C.

63: 625-784 (Nov.) 1928

Prisoners of War: What Have Been Chief Causes of Their Sufferings in Past and How Can These Be Best Prevented in Future? R. C. Heflebower.—p. 625.
Review of Depth Perception. F. H. Thorne.—p. 643.
*Antirachitic Efficiency of Skyshine in Washington, D. C. W. D. Fleming.—p. 658.
Training of Medical Reserve Officer. M. W. Sherwood.—p. 673.
Replacements and Hospitalization and Their Relation to Losses in War. A. P. Clark.—p. 678.
Emergency Surgery in South Africa. P. R. Zinn.—p. 702.
Carcinoma of Diverticulum of Urinary Bladder. J. C. Kimbrough.—p. 713.
Tularemia: Case. A. J. Redland.—p. 715.
Pneumococcus Meningitis: Case Treated with Ethylhydrocupreine and Huntoon's Antibody Solution. A. Carbonell and E. L. Cook.—p. 718.
Recollections of Old Medical Officers: Brigadier General John Campbell. F. R. Keefer.—p. 725.

Antirachitic Efficiency of Skyshine.—Experiments made by Fleming with rats show that the light received from the north sky (skyshine) without direct sunlight, in Washington, D. C., during the months of April, May, June and July, 1928, afforded sufficient ultraviolet to promote normal ossification in rats confined under a glass permeable to ultraviolet rays to a degree of about 29 per cent, these rats being on a diet which produced marked rickets in rats receiving no ultraviolet rays under window glass. The gain in weight of the rats receiving this amount of ultraviolet was also greater than in the rats under window glass. It appears, therefore, that a solarium designed for ultraviolet therapy and glazed with a glass permeable to ultraviolet rays to the degree of at least 29 per cent need not be placed on the south side of a building where it will receive direct sunlight, but, at least as far as antirachitic therapy is involved, will be effective if it receives the light from only the northern hemisphere of the sky.

Rhode Island M. Journal, Providence

11: 173-188 (Nov.) 1928

Postoperative Complications: II. Hysterectomy Compared with Appendectomy. A. H. Miller, Providence.—p. 173.
Early Diagnosis of Tuberculosis. H. L. Barnes, Wallum Lake.—p. 175.
Streptococcus Meningitis: Eight Cases. H. E. Smiley, Providence.—p. 179.
Therapeutic Pneumothorax. J. Rosenblatt, Wallum Lake.—p. 182.

Southern Medical Journal, Birmingham, Ala.

21: 887-982 (Nov.) 1928

*Fungal Infections of Perianal Skin and Rectum. E. H. Terrell and F. W. Shaw, Richmond, Va.—p. 887.
*Advantages and Dangers of Inlying Ureteral Catheter in Kidney Infections. E. C. Shaw, Miami, Fla.—p. 889.
*Allergic Factor in Mucous Colitis. W. T. Vaughan, Richmond, Va.—p. 894.
Submucous Fibrosis (Localized Cystitis). W. A. Frontz, Baltimore.—p. 899.
Ketone Diet in Epilepsy. W. W. Harper, Selma, Ala.—p. 903.
*Thymus. C. J. Bloom, New Orleans.—p. 905.
*Relation of Intestinal Flora to Clinical Findings. J. B. Fitts, Atlanta, Ga.—p. 911.
*Effect of Bismuth Violet (Hexamethyl-Para-Rosanilin Bismuth) on Certain Pathogenic Organisms. G. R. Wilkinson and I. S. Barksdale, Greenville, S. C.—p. 914.
Hookworm Conditions Among Pupils from 6 to 10 Years of Age in Four School Districts in Decatur County, Georgia. M. A. Fort, Bainbridge, Ga.—p. 917.
Achlorhydria. D. R. Black, Kansas City, Mo.—p. 920.
Results of Arthroplasties or Reconstructions of Ankylosed Joints. W. C. Campbell, Memphis, Tenn.—p. 924.
Advantage of External Route in Operative Treatment of Chronic Maxillary Sinusitis Diagnosed by Roentgen Ray. J. B. Farrior, Tampa, Fla.—p. 926.
Problems of Adolescence. P. F. Barbour, Louisville, Ky.—p. 931.
Sarcoma of Pancreas: Case. C. D. Barkley and W. F. Hand, State Line, Miss.—p. 933.
*Leukoplakia Buccalis. F. J. Eichenlaub, Washington, D. C.—p. 935.
Some Phases of Peptic Ulcer. R. L. Sanders, Memphis, Tenn—p. 940.
Foreign Bodies Encircling Penis. R. W. McKay, Baltimore.—p. 943.
Comparison of Numbers of Bacterium Coli in Iced and Uniced Samples of Water Shipped to Laboratory for Bacteriologic Examination. G. Ellison, H. W. Hackler and W. A. Buice, Norman, Okla.—p. 948.

Fungal Infections of Perianal Skin and Rectum.—This report by Terrell and Shaw is based on fifty-four cases treated by local application of salicylic acid. Thirty-six patients have been symptomatically cured, all lesions have healed, and the patients are entirely free from itching. Ten have been materially benefited but not entirely cured, having still slight occasional itching. Eight have received no apparent benefit and were referred to dermatologists for treatment. Fungi have been isolated from seven patients with superficial ulceration of the rectum and sigmoid. In some cases the salicylic acid, 30 grains to the ounce of vehicle, was incorporated in an ointment, in others in alcoholic solution. The use of salicylic acid, a recognized fungicide, invariably produced almost immediate results.

Dangers of Inlying Ureteral Catheter.—Clinical observations and animal experimentation have led Shaw to believe that permanent injury may be done the ureter by the injudicious use of the inlying catheter. The ureter is a delicate structure with an intricate physiology and will not withstand for an indefinite period the presence of a catheter sufficiently large to keep it in a state of continuous tension. The danger would appear to be even greater should the catheter be placed in the acutely inflamed ureter. Shaw believes that inlying catheters larger than number 6 French should rarely be used in acute pyelonephritis and that they should not be allowed to remain in place continuously longer than twenty-four hours. In long-standing pyonephrosis the pus is usually thicker, and catheters smaller than number 8 French may become obstructed; but it seems advisable, even in these cases, to employ as small catheters as possible. Should a catheter larger than number 8 French be absolutely necessary for drainage, it is probably best that

it should not be allowed to remain in the ureter continuously longer than twelve hours.

Allergic Factor in Mucous Colitis.—Seven of eleven cases reported by Vaughan have shown improvement attributable to specific protein avoidance. Therefore he concludes that allergy is at least one factor in the causation of some cases of mucous or mucomembranous colitis. He has obtained his best results in those cases in which there were minimal secondary changes and minimal nervous manifestations.

Roentgen Therapy of Thymus Diseases.—Experience with 107 cases of disease of the thymus have proved to Bloom that roentgen treatment is the one of choice. Marked reactions have been noted in the cases treated with radium. It has precipitated forms of anemia at times alarming and incapacitated the children to a marked degree. Unless the case is unusual and the symptoms require heroic intervention, one treatment weekly will suffice. Though two complicated cases were fatal, the remaining number have responded to treatment and no sudden death which has warranted a diagnosis of unrecognized thymus disease has occurred.

Relation of Intestinal Flora to Clinical Observations.—The flora in 300 stools from 220 cases representing various clinical conditions has been studied by Fitts. Thirty-six per cent of the stools showed a bad putrefactive type with only 15 to 25 per cent protective organisms; 56 per cent showed a mixed type of flora, 30 to 40 protective, and only about 1 per cent showed a flora of the 50-50 type, in which the protective and the putrefactive organisms occur in equal percentage. In no specimen was the so-called normal 80 per cent gram-positive flora on Tissier found. The type of food ingested has a direct influence on the flora. A mixed diet with meat included shows a gram-negative 25 to 35 per cent; a diet excluding meat would show from 35 to 50. On a minimum protein diet with the addition of lactose and dextrin the protective bacteria become dominant, showing 60 per cent and higher. One hundred and fifty-three of the cases in this series showed evidences of intestinal stasis. There were eight cases of diarrhea and twenty-eight in which the bowels were regular. There were 125 cases showing indican in the urine and ninety-two cases not showing indican. In many bad types of flora, indican is absent. There are quite a few cases of high indicanuria even when the flora is of the distinctly protective or aciduric type. As to the predominant subjective symptoms in the case of putrefactive flora, the symptom of gas was found in 20 per cent, fulness in 6 per cent, headache in 10 per cent and vomiting in 10 per cent; constipation is a dominant symptom in practically all of the cases. Seventy-five per cent showed sallow skins and chronically coated tongues. A majority showed diminished hemoglobin values. Eighty-four per cent gave a history of a laxative habit. A summary of the diet in these cases showed that 72 per cent were on a mixed diet, the remainder on a meat-free diet, a milk-egg diet and an egg-vegetable diet. Transformation of the flora can be accomplished in the great majority of cases. In this series the usual measures employed were first to correct the abdominal posture. The remedy is the insistence of the maintenance of the constantly contracted abdominal muscle, and this implies everything accomplished by exercise and abdominal supports. Next in importance is a diet with adequate vitamin B, which is vital to tonicity of the musculature of the gastro-intestinal tract. As to the individual dietetic requirement, the minimum protein, the mixed diet, all can be employed to suit the particular case. A word of caution is said against the employment of long continued low protein diets in these cases, and care must be used to provide the necessary minimum to maintain a normal nitrogen equilibrium: that is, 1 Gm. of protein per kilogram of body weight. This is especially true in the Southeast, where pellagra might result or be influenced by an ill advised or self-imposed meat-free or inadequate protein diet. As to medication, all laxatives are better dispensed with, using only the oil-agar combinations, alkalis and enemas as indicated. The routine use of flaxseed and psyllium seed is very helpful. Lactose and lacto-dextrine combinations always hasten the transformation. Acidophilus milk from a reliable laboratory also more quickly brings the change to the aciduric type of flora.

Effect of Bismuth Violet on Bacteria.—This new bactericidal dye, bismuth violet, has been shown by Wilkinson and Barksdale to be very efficacious in vitro with *Staphylococcus albus, Staphylococcus aureus, Streptococcus pyogenes, B. coli communis, B. typhosus, B. paratyphosus* A and B, *B. anthracis*, and *B. pyocyaneus*. In vitro, the gram-positive organisms are more readily killed than the gram-negative. *B. pyocyaneus* is very resistant to the dye in aqueous solution. However, this organism is readily killed by a 1 per cent solution of the dye in 75 per cent alcohol. *Staphylococcus albus, Staphylococcus aureus* and *Streptococcus pyogenes* are most sensitive to the dye. The toxicity of bismuth violet is quite low, as rabbits can well tolerate doses of 10 mg. per kilogram of body weight. The drug has been of definite value in the treatment of certain acute and chronic infections, such as varicose ulcers and infected wounds.

Leukoplakia Buccalis.—Among 2,349 cases, leukoplakia was found by Eichenlaub in seventy, or 2.9 per cent. Sixty-eight, or 97.1 per cent, of these patients used tobacco. In fifty-seven, or 81.4 per cent, of the cases, dental spurs or carious teeth were present. The location of these teeth with reference to the leukoplakia could not be determined. It was frequently noted, however, that leukoplakia of the buccal mucosa especially was opposite bad teeth, or opposite the position of extracted teeth. Seventy-five, or 3.2 per cent, of the whole group had syphilis. Of the seventy cases of leukoplakia, syphilis was present in twelve, or 17.1 per cent. Suggestive Wassermann reactions, or history of syphilis, was present in ten additional cases, bringing the total probable incidence of syphilis to twenty-two, or 31.4 per cent, of the cases. Tuberculosis was present in 31.8 per cent of the whole group and in 20 per cent of the leukoplakia group. Four of these patients also had syphilis. In the remaining forty-eight cases, evidence of focal infection exclusive of the mouth was present in all but sixteen cases. Oral infection was present in sixty-three cases and should be considered as a possible factor. From these facts it may be tentatively concluded that leukoplakia depends on two factors: (*a*) local irritation from tobacco, rough teeth and mouth infection; (*b*) a predisposition to the disease caused by syphilis, tuberculosis and focal infection.

Surgery, Gynecology and Obstetrics, Chicago

47: 593-750 (Nov.) 1928

*Transplantation of Ureters into Large Intestine. R. C. Coffey, Portland, Ore.—p. 593.
*Cranial and Intracranial Damage in New-Born. D. Munro, Boston.—p. 622.
Innervation of Vessels. R. Leriche and R. Fontaine, Strasbourg, France.—p. 631.
*Leiomyoma of Colon. J. A. Wolfer, Chicago.—p. 643.
*Tuberculosis of Epididymis. H. L. Kretschmer, Chicago.—p. 652.
*Differentiation of Reducing Bodies in Urine During Pregnancy. R. Rockwood and E. F. Dodge, Baltimore.—p. 660.
*Dangers in Postoperative Use of Insulin. E. Andrews and K. Reuterskiold, Chicago.—p. 665.
Hemolytic Anemia in Pregnancy. W. Allan, Charlotte, N. C.—p. 669.
Technic of Bronchoscopic Pneumonography with Lipiodol. D. H. Ballon, Montreal.—p. 673.
Aseptic Intestinal Anastomosis (Scarff) in Resections of Large Bowel. J. R. B. Branch, Peking.—p. 678.
Epispadias in Females and Its Surgical Treatment. D. M. Davis, Rochester, N. Y.—p. 680.
*Treatment of Congenital Dislocation of Hip by Open Operation. W. R. MacAusland, Boston.—p. 697.
Cleft Palate. A. M. Forbes, Montreal.—p. 707.
*Endometrial Adenomas in Abdominal Scar Following Cesarean Section. W. J. German, Boston.—p. 710.
*Controllable Spinal Anesthesia in Obstetrics. G. P. Pitkin and F. C. McCormack, Teaneck, N. J.—p. 713.
Importance of Early Tracheotomy. W. H. Prioleau, Cleveland.—p. 726.

Transplantation of Ureters Into Large Intestine.—Coffey describes what he terms the closed duct tube technic for transplantation of the ureters into the large intestine. Proof of the safety and efficacy of the operation is offered in a report of the first nine consecutive cases in which this technic was used. Two of the operations were for exstrophy of the bladder, one was for incurable vesicovaginal fistula, and six were for advanced carcinoma of the bladder. There were no fatalities or near fatalities; there was one ureteral leak due to too much force being used when the catheter was removed, and one ascending infection of the right kidney due to accidental puncture of the sigmoid with the sigmoidoscope. The patient with the kidney infection finally recovered, and became a perfectly

healthy boy. In all cases, renal function has seemingly been undiminished, the rectal function in the control of urine has been satisfactory, and there has not been any evidence of kidney disturbance after convalescence. Coffey recommends this operation for general use in cancer and in maladies other than exstrophy of the bladder.

Cranial and Intracranial Injury in New-Born.—The end-results of a series of 117 cases of cranial and intracranial injury in the new-born are presented by Munro. The diagnosis of intracranial hemorrhage of the new-born must be expanded to include cerebral edema and fracture of the skull, and should be stated as "cranial and intracranial injury in the new-born." Postmortem gross and microscopic studies conducted in forty-five of the fifty-six primarily fatal cases show that meningeal and intracortical hemorrhage, congestion and edema are the most common pathologic entities. Gross intracranial hemorrhage may occur from the rupture of most of the large venous sinuses, the most common sites being the great vein of Galen or the lateral sinus. Intracortical edema and congestion alone may cause death in the new-born. Associated developmental anomalies and cerebral developmental defects were in the one case negligible and in the other absent in this series. Forty-eight of the fifty-eight babies discharged living and relieved have been followed up to December, 1927. Thirty-nine of the forty-eight may be classed as cured; five are still too young to allow of a satisfactory estimation of the end-results. The most common late result of cerebral injury in the new-born is hydrocephalus associated with either epilepsy or idiocy. Convulsions alone and spasticity associated with idiocy have also occurred. Active treatment in this series was limited to lumbar decompression after recovery from surgical shock. In addition, parental blood was given intramuscularly in the group with hemorrhagic disease. Depressed fractures were elevated as soon as possible. Ventricular puncture was done twice, as was a typical subtemporal decompression.

Leiomyoma of Colon.—The tumor in Wolfer's case was a leiomyoma growing from the ascending colon. It weighed approximately 1,050 Gm. It measured 13 cm. in its widest diameter and was ovoid in contour. One knob about 3 cm. in diameter and 2 cm. in height projected from what had been the anterior inferior surface. The surface of the tumor was smooth, with here and there tags of connective tissue. Many fair sized veins lay in the capsule. The ascending colon and cecum were resected and the terminal ileum was anastomosed to the hepatic flexure by lateral anastomosis. Wolfer emphasizes that smooth muscle tumors of the intestines, although not common, do occur frequently enough to be considered in the differential diagnosis of abdominal tumors and intestinal obstruction, especially intussusception when the attacks tend to be spontaneously relieved only to recur again from time to time. Moreover, they must be considered in the differential diagnosis of large, fixed, ulcerating and obstructing growths of the rectum.

Tuberculosis of Epididymis.—In reviewing these ninety-four cases, Kretschmer attempted to determine whether or not patients who were operated on lived longer than those who were treated without surgery, whether the causes of death were different in two groups, and, finally, the cause of death. In this series seventy-eight patients were operated on and of these seventy-eight patients sixteen are dead and fifty-seven are living. The results in five cases are not known. There were no immediate deaths, but the conditions causing death occurred at varying periods after the patients left the hospital. The three most frequent causes of death in this group were tuberculous meningitis, pulmonary tuberculosis and miliary tuberculosis. In the fatal cases in which operation was not performed, although the total number is only eight, the two most frequent causes of death were miliary tuberculosis and tuberculous meningitis, while in the other group, the two most frequent causes were tuberculous meningitis and pulmonary tuberculosis. One patient who died sixteen days after epididymectomy had a very advanced case of pulmonary tuberculosis. He was operated on under local anesthesia for multiple fistulas, which were discharging great quantities of pus. The operation was principally undertaken for the purpose of giving the patient some degree of comfort. One of the patients not operated on lived eleven years after the diagnosis of tuberculosis of the epididymis had been made. He finally died of pernicious anemia.

Reducing Bodies in Urine in Pregnancy.—Rockwood and Dodge are of the opinion that a reducing body found in the urine of a pregnant woman during the period of breast engorgement is probably lactose rather than dextrose. A reducing body found in the urine of a pregnant woman during pregnancy and before the period of breast engorgement is probably dextrose rather than lactose. Dextrose found in the urine during pregnancy is almost always due to a glycosuria of renal or hemic type rather than to diabetes. Twenty-eight per cent of a series of specimens of urine from pregnant women showed reduction by the Benedict test. Osazones of unknown type occurred in five cases. The fermentation test according to the method of Host gives more specific results than does that of Matthews. The charcoal method of isolating lactosazones was not successful in the few cases in which it was employed. In only about one half of the nonfermentable specimens was it possible to isolate lactosazones. These came from patients with both milk and colostrum in the breast and from two non-lactating patients.

Dangers of Postoperative Use of Insulin.—Andrews and Reuterskiold assert that the use of insulin and dextrose in patients who are suffering from postoperative conditions, and are therefore unavoidably dehydrated, is a highly dangerous and useless procedure. It must be remembered that in toxic conditions, fluids are fixed by colloids and are not available for physiologic purposes and that the "free" water in the organism is therefore reduced even more than the total water. This condition (fixation of "free" water) is physiologically equivalent to dehydration. What these patients need is dextrose and water. They are starved and thirsty and have a constant hypoglycemia, and insulin not only does not produce any glycolysis but tends to lower the already low blood sugar still further. This insulin hypoglycemia not only is marked but often reaches the danger point and the symptoms of hypoglycemia are so similar to many other postoperative complications that their recognition is exceedingly difficult. Therefore, in postoperative acidosis and dehydrated conditions, dextrose and water are needed. Not only is insulin not needed but its use is definitely contraindicated.

Open Operation for Congenital Dislocation of Hip.—MacAusland stresses the fact that the open operation, which affords the opportunity to study the pathologic changes and which involves much less danger than forcible manipulative and mechanical procedures, may be used to advantage more often than is the customary practice. Examination of the pathologic changes often reveals an hour-glass shaped constriction of the capsule, or marked anteversion of the femoral neck, or an acetabulum filled with adherent tissue covered over with the inferior capsule. In the presence of such alterations, the closed method is futile. Operative intervention is indicated in children from 4 to 8 years of age, when one or two closed manipulations have failed. In older children it is the method of choice, and in adults it is indicated to correct deformity and to relieve arthritic symptoms. Simple replacement of the head within the socket is the ideal method of treatment. If age or extensive pathologic changes exclude the use of this method, reconstruction operations may produce results which are functionally and anatomically satisfactory.

Endometrial Adenomas in Abdominal Scars.—Endometrial adenomas in the abdominal scar, following opening of the pregnant uterus, have been reported in twelve cases. These cases are reviewed by German and two new cases are added. The most frequent symptom is pain in the scar during the menstrual periods. Local excision is sufficient for removal of the tumor. The implantation theory would seem to give the best explanation of the origin of this group of endometrial adenomas. The occurrence following cesarean section would suggest the use of the low type of uterine incision, as the lining is chiefly cervical mucosa in that region.

Spinal Anesthesia in Obstetrics.—Pitkin and McCormack do not insist that spinal conduction or local anesthesia should always be employed, but experience has taught them that with their use they do not encounter the troublesome postoperative anesthetic after-effects, such as nausea, vomiting, gas distention, ileus, acidosis, pneumonia and innumerable other complications,

which are directly caused by inhalation anesthesia. The primary mortality is undoubtedly less, whereas the secondary mortality, or in other words the mortalities which occur from one day to one week following operation and which are due directly to inhalation narcosis, are practically nil. Morbidity is reduced to a minimum.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

16: 181-344 (Oct.) 1928

*Operation for Making Forearm Prehensile After Loss of Hand. A. K. Henry.—p. 188.
Primary Carcinoma of Bronchus with Secondary Bronchiectasis: Death Following Phrenic Evulsion: Case. M. Davidson and R. C. B. Ledlie.—p. 198.
*Action of Saliva and Gastric Juice on Clotting of Blood. J. B. Hunter.—p. 203.
Primary Thrombosis of Axillary Vein: Eight Cases. E. P. Gould and D. H. Patey.—p. 208.
Significance of Hepatitis in Relation to Cholecystitis. A. L. Wilkie.—p. 214.
*Ganglioneuromatosis of Alimentary Tract. H. Poate and K. Inglis.—p. 221.
*Significance of Blood Cholesterol in Genito-Urinary Surgery. J. Maxwell.—p. 226.
Anatomy of Cervical Rib: Case. E. W. Riches.—p. 235.
*Partial Gastrectomy for Chronic Gastric Ulcer. J. Morely.—p. 239.
Id.: Gastric Analysis Following Partial Gastrectomy. W. M. Roberts.—p. 251.
Surgical Treatment of Gastric Ulcer: Massive Ulcers. G. Wright.—p. 253.
Elephantiasis. A. P. Bertwistle and A. L. Gregg.—p. 267.
*Depressive Influence of Sympathetic Nerves on Gastric Acidity. H. Moll and E. R. Flint.—p. 283.
Removal of Cerebral Tumors. P. Sargent.—p. 308.
Hypertrophy of Gums. R. J. M. Love.—p. 315.
Giant (117.2 Gm.) Renal Calculus with Epithelioma in Horseshoe Kidney. R. J. Willan.—p. 317.
Squamous Carcinoma of Scalp Associated with Two Rodent Ulcers on Shoulder Originating in Patch of Psoriasis: Case. E. R. Flint and J. Gordon.—p. 321.
Pedunculated Extragastric Leiomyoma of Stomach with Hemorrhagic Degeneration: Cause of Acute Intra-Abdominal Hemorrhage. T. M. Millar.—p. 323.
Cystic Dilatation of Common Bile Duct. J. Taylor.—p. 327.
Nonrotation of Mid Gut: Case. J. W. Thomson.—p. 332.
Enteric Cyst of Large Size in Boy. E. G. Slesinger.—p. 333.
Volkmann's Ischemic Contracture Treated by Transplantation of Internal Epicondyle into Shaft of Ulna. H. Bailey.—p. 335.
Interarticular Dislocation of Patella. J. P. Jones.—p. 338.
Intestinal Obstruction Caused by Enterolith. H. Hallilay.—p. 340.

Making Forearm Prehensile After Loss of Hand.—Henry's patient had his left hand cut off at the wrist by a tramcar wheel. He reports the results of an attempt to give the patient a prehensile forearm. His objects were (1) to cut from the outer side of the radius a rod of bone which should have about the total length of a normal thumb, including the metacarpal segment; (2) to leave in situ (*a*) the thumb tendons already related to this piece of bone, i. e., the tendons of the extensor ossis metacarpi pollicis, and of the extensor brevis pollicis, (*b*) the tendon of the brachioradialis, and (*c*) the trunk of the radial artery; (3) to make two false joints, one in the rod, about 2 inches from the distal end, the other proximally where the rod should meet the radius; (4) to attach two flexor tendons to the jointed rod, viz., the flexor pollicis longus and the flexor carpi radialis; (5) to enclose these structures in a tube of skin, and (6) to set the new digit thus framed and furnished obliquely across the palmar face of the stump in such a way as to oppose its ulnar border. The operation was entirely successful.

Action of Saliva and Gastric Juice on Blood Clotting.—Hunter reports on his investigation made in the belief that saliva had some action on shed blood, probably by decreasing the coagulation time. The rapidity with which wounds in the buccal cavity stop bleeding and the firm clots that occur in that situation seemed to indicate that saliva has a coagulant action. The conclusions afforded by his experiments were as follows: 1. There is present in saliva a substance that hastens the clotting of blood. 2. Gastric juice with free hydrochloric acid delays the clotting of blood. 3. This delay in clotting is most marked in the presence of high acid juices such as occur in gastric and duodenal ulcers. 4. The clot formed in the presence of free hydrochloric acid is jelly-like in character and never firm. It may be deduced therefore that the substance which hastens the clotting of blood is either destroyed or precipitated by weak acids. Hunter suggests that this substance is identical with tissue fibrinogen, although he has not been able to isolate it from saliva. In a hemorrhage from a simple gastric or duodenal ulcer the shed tissue fibrinogen is wholly, or in part, rendered inactive by the hydrochloric acid, and as this necessary adjuvant to the clotting of blood is present in inadequate amount, there is marked delay in clotting, and the clots when formed are poor and jelly-like in character. Such a jelly clot has obviously less chance of blocking an open vessel, and is very easily dislodged by the movement of the stomach. The addition of more tissue fibrinogen to the stomach under such conditions should materially aid the clotting, and this is supplied by saliva. On the other hand, some of the extra tissue fibrinogen so supplied will be thrown out of action by the acid gastric juice, but not all. Such being the physiologic state, the treatment of hematemesis from simple gastric and duodenal ulcers would seem to be as follows: 1. The flow of saliva should be augmented by the sucking or chewing of some innocuous substance. 2. The gastric juice should be neutralized by the frequent administration of small quantities of alkali. 3. The movement of the stomach should be restricted by rest and the administration of morphine.

Ganglioneuroma of Alimentary Tract.—Poate and Inglis report the case of a man, aged 30, who complained of flatulence, fulness and discomfort in the epigastrium, and pain behind the right shoulder. The symptoms were most noticeable just before meals or when the patient was in a cramped position for a long time, as, for example, while riding or driving. The pain was worse if he was constipated. He was blown up at Messines in June, 1917; he did not sustain any obvious injury, but while in a hospital in England it was noticed that he had a swelling in the right loin. An operation was performed, and it is stated in his record that "a cystic retroperitoneal tumor was removed from the right loin. The kidney was found to be normal." Physical examination did not reveal anything abnormal except for a peculiar fulness in the right side of the abdomen. There was no tenderness. Roentgen examinations showed a constant deformity of the duodenal cap, with a reflex transient incisura near the fundus of the stomach. The roentgen diagnosis was chronic duodenal ulcer. At operation a chronic ulcer was found on the anterior wall of the first part of the duodenum, and a large soft mass was felt in the ascending colon. This mass, which resembled a chronic intussusception extending as far as the hepatic flexure of the colon, was composed partly of a soft neoplasm inside the bowel, and partly of cecum and ascending colon, which were greatly distended by the growth. The portion of bowel between the terminal ileum and proximal part of the transverse colon was resected. The ends of the bowel were closed, and a lateral anastomosis between the ileum and transverse colon was performed. The duodenal ulcer was then oversewed and a posterior gastrojejunostomy was performed. The patient did not show any sign of shock and made an uninterrupted recovery. When interviewed about eighteen months later, he was free from all symptoms and showed no evidence of any abnormal state. The tumor proved to be a ganglioneuroma.

Significance of Blood Cholesterol in Genito-Urinary Surgery.—The results obtained by Maxwell in a small series of cases do not bear out the claims made by MacAdam and Shiskin concerning the importance of the plasma-cholesterol from a prognostic point of view. The impression gained from doing the actual investigations was that clinical observation, combined with blood urea and urea concentration observations, yielded in most cases a reasonably accurate forecast of future events. On several occasions a low plasma-cholesterol suggested a bad prognosis, which did not materialize, whereas other patients who presented a normal cholesterol figure but clinically were bad operative risks were either refused operation on clinical grounds alone or died shortly thereafter as a result of some complicating infection.

Partial Gastrectomy for Chronic Gastric Ulcer.—Morely prefers the Schoemaker gastrectomy for gastric ulcer. Of sixty-eight patients only two died, a mortality of 2.9 per cent.

The Polya gastrectomy for gastric ulcer was performed in forty-seven patients, of whom three died, a mortality of 6.4 per cent. In five gastrectomies for a gastrojejunal ulcer, there were no deaths.

Influence of Sympathetic Nerves on Gastric Acidity.—Evidence is brought forward by Moll and Flint to show that the sympathetic contains inhibitory secretory fibers to the stomach, the depressive influence of the sympathetic system on the secretion of free hydrochloric acid in the stomach having been deduced from the following observations: (1) the constant tendency toward subnormal or absent secretion of free hydrochloric acid in hyperthyroidism; (2) the lowering effect of experimental thyroid feeding on gastric acidity; (3) the definite inhibitory action of epinephrine administration on gastric acidity both in man and in animals; (4) the hyperchlorhydria induced by the paralytic action of nicotine on the sympathetic in man; (5) the depressive influence of emotions on gastric secretion, and (6) the experimental hyperchlorhydria induced in dogs after bilateral division of the major splanchnic nerves. Certain conclusions of clinical importance may be drawn from these observations with regard to hypochlorhydria or achylia associated with extragastric diseases. Although a large number of these cases may be explained by asthenia of the gastric glands in debilitating conditions (cancer, apart from carcinoma of the stomach, anemias and fevers) or by permanent injury caused by bacterial toxins (chronic rheumatoid arthritis, chronic colitis, pernicious anemia), others may be caused by persistent inhibitory reflexes (hyperthyroidism, gallbladder disease). Similarly, cases of hyperchlorhydria may be explained by neuritis of the solar plexus caused by focal infections (chronic appendicitis) or by a diminished tone of central inhibitory sympathetic centers (hyperchlorhydric dyspepsia due to overwork, worry and the ordinary stress of life).

British Medical Journal, London

2: 733-778 (Oct. 27) 1928

Teaching of Hygiene. W. W. Jameson.—p. 733.
Therapeutic Value of Heavy Metals in Pulmonary Tuberculosis. L. S. T. Burrell.—p. 737.
*Diabetes Mellitus and Heredity. P. J. Cammidge.—p. 738.
Injuries of Ear Arising from Fractures of Skull. E. D. D. Davis.—p. 741.
*Uncommon Ill Effects of Arsphenamine Treatment. W. J. O'Donovan.—p. 742.
*Thyrotoxicosis and Indicanuria. L. Rogers.—p. 744.
Painless Labors. M. DeGaris.—p. 745.
Foreign Body (Piece of Catheter) in Bladder. H. W. Webber.—p. 747.
Gunshot Wound of Chest. L. G. Jacob.—p. 748.
*Fatal Tracheal Obstruction Due to Inflamed Thymus Gland. J. C. Hamilton.—p. 748.
Tetanus Combined with Gas Gangrene: Case. J. C. Moir.—p. 748.
Rupture of Diaphragm in Case of Von Jaksch's Anemia. S. N. Dow.—p. 728.

Diabetes Mellitus and Heredity.—Cammidge says that although there can be no doubt that heredity plays a part in the production of the defects of carbohydrate metabolism, giving rise to glycosuria and diabetes in many instances, there is not as yet sufficient evidence to justify the conclusion that an inherited factor is a necessary basis for their development in all cases. Should further research prove that such a basis exists, it would do much to simplify ideas of the etiology of diabetic conditions by providing a common bond between the various forms, the differences in symptomatology, severity and age incidence which occur being then accounted for by the character of the inherited factor and the nature of the exciting cause. Prognosis, too, would be more certain, for it would be largely determined by evidence pointing to the hereditary tendency as being of the dominant or recessive type, while the fact that the glycosuria associated with the former is mild and easily controlled, whereas the recessive form is generally progressive and more severe, would be of assistance in formulating an appropriate line of treatment. Even in the present state of knowledge, inquiry into the family history of a patient suffering from glycosuria will often supply information which is useful in treatment, and, by the reassuring prognosis it may suggest, go far to dispel the fear of "diabetes" that the discovery of sugar in the urine arouses in so many people. The main value of the evidence regarding the occurrence of an hereditary factor in defects of carbohydrate metabolism is, however, its bearing on the question of marriage. The marriage of diabetic persons is clearly inadvisable, and intermarriage between families in which there is even a remote history of the disease is to be discouraged; but as advice of such matters, although often asked, is rarely taken, the children and grandchildren, even to the third and fourth generation, should be watched and guarded as far as possible from exciting causes likely to develop a latent and inherited defect.

Ill Effects of Arsphenamine Treatment.—O'Donovan reports four cases: (1) postarsphenamine melanodermia; (2) postarsphenamine maculomelanodermia with follicular hyperkeratosis; (3) multiple subcutaneous abscesses associated with arsenical exfoliative dermatitis, and (4) cutaneous and subcutaneous necroses, associated with perforation of the nasal septum with arsenical exfoliative dermatitis.

Thyrotoxicosis and Indicanuria.—Rogers made an investigation to discover what relationship existed between the intestinal dissociation of aromatic amino-acids and thyroid hyperactivity. Using a standard technic, colorimetric estimations of the concentraton of urinary indican as indigotin were carried out for (*a*) healthy subjects, (*b*) nonthyrotoxic patients and (*c*) patients with thyrotoxicosis. Indicanuria curves were made. There were no outstanding differences in the curves from each of these groups. The urine of women is more often free from indican than that of men. Higher concentrations of indican occur more frequently in men. The concentration of urinary indican does not bear a constant relationship to the degree of thyrotoxicosis. The hypothesis which ascribes thyrotoxicosis to an increased absorption of unchanged aromatic amino-acids from the intestine is not confirmed. The statement that in all cases of well established exophthalmic goiter there is no indican in the urine is not borne out. In several well established cases high readings were obtained. Three volunteers were injected intravenously with small quantities of tyrosine. There was no effect on their pulse rates. The active principles of both thyroid and suprarenal extracts are probably derived from tyrosine, but there is no evidence to show that the amount of these principles depends at any one moment on the quantity of tyrosine available from the alimentary tract.

Obstruction of Trachea by Thymus.—Hamilton reports a case of laryngeal obstruction which yielded to antitoxin, but later, fatal tracheal obstruction due to an inflamed thymus gland and to suppurating lymph glands supervened.

Lancet, London

2: 957-1008 (Nov. 10) 1928

*Mechanism of Expectoration. C. Wall.—p. 957.
*Ultimate Results of Quinidine Therapy in Auricular Fibrillation. J. C. Bramwell and R. Ellis.—p. 960.
*Action of Radiation on Blood Supply of Tumors. J. C. Mottram.—p. 966.
*Addison's Anemia: Effect of Treatment on Intestinal Infection. F. A. Knott.—p. 968.
Epinephrine Test for Thyrotoxicosis. L. Rogers.—p. 970.
Atypical or Mild Enteric Fever. E. Thorp.—p. 972.
*Treatment of Asthma in Children with Tuberculin. T. M. Ling.—p. 972.

Mechanism of Expectoration.—A practical application of the mechanism of expectoration is made by Wall in the treatment of disease. One of the simplest applications of medical knowledge may be found in the dietetic treatment of chronic bronchitis or a tendency to recurrent bronchitis in a patient with abdominal obesity. The reduction of his girth will in many ways assist in the descent of the ribs and constriction of the thoracic outlet and so permit easy and beneficent expectoration. Another application may be found in the treatment of active hemoptysis. Not infrequently in this condition the patient is kept lying flat; in this position he is unable to cough and expectorate easily, and as a result with each gush of blood he starts up in bed and leans forward in order to get rid of it. This movement cannot be beneficial. It is far better to allow the patient to be in a semisitting position so that expectoration may be accomplished with the least effort. In addition, the effect of gravity in lowering the pulmonary blood pressure is probably advantageous in promoting clotting. Concomitant fainting may not be a disadvantage. In the treatment of all kinds of cough associated with expectoration, it is an advantage to allow the patient to sit so as to fix the pelvis and to bend the spine and neck forward so as to aid the depression of the ribs. If there

is inspiratory difficulty at the same time, the patient should lean on something firm so as to fix the shoulder girdle and give the muscles of extraordinary inspiration a fixed point from which to act.

Quinidine Therapy in Auricular Fibrillation.—In an unselected series of twenty-seven hospital cases of auricular fibrillation, all of which were first treated with quinidine more than two years previously, definite and lasting benefit was obtained in nine instances. In eight cases the drug failed to produce normal rhythm, and in the remaining ten cases, though fibrillation was arrested, either the restoration of the normal mechanism proved to be a merely transient event, or the patient derived no definite benefit therefrom. In five cases the etiologic factor appeared to be a chronic myocardial fibrosis, and in the remaining twenty-two the cardiac lesion was definitely or probably rheumatic. Some of the dangers of quinidine therapy are considered by Bramwell and Ellis, and the method of administration is discussed.

Effect of Irradiation on Blood Supply of Tumors.—A suggestion is made by Mottram as to why the blood supply of fast growing tumors, with cells abundantly and closely packed around the blood vessels, is especially interfered with by irradiation. The nuclei of cells swell to about three times their normal size (superficial area) on about the second or third day after irradiation. This increase in bulk must take place at the expense of, and bring pressure to bear on, the surrounding tissues and structures. Thus capillaries and veins will be pressed on, and in fast growing tumors in which the intervascular spaces are closely packed with tumor cells, this will take place to a greater extent than when the tumor cells are less closely packed, as in slow growing tumors. According to these observations, therefore, the rate of growth is not primarily the determining factor; it is because closely packed cells are commonly found in fast growing tumors that these are especially susceptible to irradiation.

Intestinal Infection in Addison's Anemia.—Evidence is given by Knott that liver treatment does not influence the intensity or the nature of the intestinal infection in Addison's anemia, that the disappearance of the positive indirect van den Bergh reaction does not necessarily correspond with a reduction in the intestional infection, and that cases in which return to a normal blood picture has occurred may still show just as high a bacterial content in the feces as when in the acutely anemic stage. To prevent remissions, therefore, the necessity of treating the alimentary sepsis directly as well as administering liver is emphasized, and some bearings of the bacteriologic facts on the possible etiology of the disease are briefly discussed.

Tuberculin Treatment of Asthma.—Ling reports the results of giving subcutaneous injections of epinephrine, starting with 0.1 cc. of a dilution of 1 in 1,000,000 and increasing the dose on each occasion by 0.1 cc. or 0.2 cc. until 0.1 cc. of a 1 in 100,000 dilution was reached. Beyond this the quantity was found for each individual patient. When once the correct quantity is obtained, it is not advisable to increase the strength of the injection, as an attack of asthma is liable to be brought on. Two separate courses of treatment have been given with an interval of two months between. Of twenty-four patients analyzed, three were unaffected by the treatment and were discharged, while two discontinued treatment. The remaining nineteen had regular treatment, with occasional weekly lapses owing to intercurrent illness, and all are improved. A cure was effected in only two cases. The remaining fifteen remained practically free from symptoms while under treatment, but there was a lapse to a varying degree between the courses and since treatment was discontinued.

Bulletin Médical, Paris

42: 1127-1154 (Oct. 24-27) 1928

Vaginal Examination During Labor. V. le Lorier.—p. 1133.
*Cesarean Section in Shoulder Presentation. P. Guéniot.—p. 1135.
*Labor Following Cesarean Section. V. Cathala.—p. 1137.
*Glycemia in Normal Pregnant Woman. Lévy-Solal, Laudat and Wolff.—p. 1141.
*Hysterectomy in Puerperal Infection. Desnoyers.—p. 1146.

Indications for Prophylactic Cesarean Section in Dystocia Caused by Shoulder Presentation.—According to Guéniot, cesarean section is indicated in dystocia from shoulder presentation: (1) when, during labor and with the fetus alive, internal version is impossible or dangerous owing to the excessive retraction or contraction of the uterus; (2) when the fetal circulation becomes embarrassed or the cord prolapses and the cervix is not sufficiently dilated to perform extraction through the vagina; (3) when there exists an indication for emptying the uterus and the undilated and resistant cervix cannot be dilated; (4) when, with the infant dead, it is impossible or too dangerous to perform spinal embryotomy either because of imminent rupture of the uterus or because of an excessive retraction or contraction of the uterus or a fetus located so high above the contraction ring that the hand could not reach it and the instruments could not be guided or manipulated with security. In addition to the conditions mentioned in which cesarean section is an operation of necessity and in addition to the cases in which the indications are complex (contracted pelvis or uterine fibroma as well as shoulder presentation), cesarean section is the operation of choice when the membranes rupture prematurely and labor does not begin and the shoulder presentation cannot be rectified by external version. Conservative cesarean section, performed at the beginning or even before the beginning of labor and as nearly as possible at term is the operation of choice in a primigravida with a shoulder presentation which obviously cannot be rectified by external version.

Labor After Cesarean Section.—Cathala believes that the uterine scar resulting from a cesarean section creates a risk during subsequent pregnancies and renders it necessary to sterilize the woman, usually after the second pregnancy. Cesarean section, therefore, should not be abused. This operation, in spite of the excellent immediate results which it gives, should not be performed if the indication is not absolute and if an obstetric intervention which leaves the uterus intact can be substituted for it without inconvenience. Nevertheless, the frequency and the gravity of rupture of the cicatrix are not such as to contraindicate the use of the natural route in subsequent pregnancies. If the woman has a normal pelvis, if the fetal head is engaged, and if there is no fear of dystocia, one should allow labor to proceed normally under careful surveillance. When the pelvis is even slightly contracted, however, and when the slightest obstacle to the descent of the head into the pelvic cavity is found, one must not hesitate to perform another cesarean section before the onset of labor.

Variations in Glycemia of Normal Pregnant Woman.—From a study of the results obtained in 122 tests of the sugar content of the blood of women during pregnancy, labor, the puerperium and lactation, Lévy-Solal et al. conclude that: 1. Permanent glycosuria should always be regarded with suspicion. In order not to commit the double fault of not treating a case of diabetes and of confounding renal diabetes and diabetes mellitus, the sugar content of the blood of every pregnant woman with glycosuria should be studied. The determination of the sugar content of the blood constitutes the indispensable test for making a definite prognosis in these cases and for deciding on the therapy. 2. The blood sugar curve should be studied both before and after labor. 3. During labor, in all the normal cases, the glycemia increases progressively and rapidly up to the time of delivery; this hyperglycemia of labor is followed by a more or less marked hypoglycemia. 4. The physiologic hyperglycemia which is observed in all normal women at term and which becomes more marked during labor explains why labor is to be particularly feared in most diabetic patients. The considerable exaggeration of an already high hyperglycemia added to the acidosis, the inanition, and the overwork of labor predisposes to diabetic coma. In these cases labor constitutes such a traumatism that the authors consider it indispensable to aid nature by systematically administering medium doses of insulin and dextrose solution.

Indications for Hysterectomy in Puerperal Infection.—Desnoyers finds that although resection of the uterus in puerperal infection seems logical by reason of the fact that the uterus is the focus of infection, the starting point of the septicemia, the fact remains that it is difficult to formulate the indications for surgical intervention with precision and at the right time. Good results have occasionally been obtained with hysterectomy, but they have been altogether exceptional. The two types of postpartum infection in which hysterectomy gives

the best results are peritonitis and prolonged postpartum retention of the placenta. Subtotal hysterectomy followed by Mikulicz' drainage resulted in the recovery of two out of five patients with puerperal peritonitis; this appears to be the only way to save these patients. In cases of late placental retention presenting important hemorrhages and with a clinical picture indicating, a grave infection, the uterus should be removed at once.

Bulletins et Mém. de la Soc. des Chirurgiens de Paris

20: 670-708 (Oct. 19) 1928

*Suprapubic Cystostomy in Treatment of Vesicovaginal Fistulas. L. Bonnet.—p. 673.
*Familial Syndactylism and Polydactylism. L. Bonnet.—p. 677.

Suprapubic Drainage of Bladder in Treatment of Vesicovaginal and Urethrovaginal Fistulas.—Bonnet considers that cystostomy and drainage are indispensable in the treatment of low vesicovaginal and urethrovaginal fistulas. He emphasizes the relative difficulty of cystostomy in these cases, which is due to the fact that it is impossible to distend the bladder. To open an empty bladder easily he recommends the use of a hollow Béniqué sound with a stilet; when pressure is exerted on the end of this stilet the wall of the bladder is raised very high. If one does not possess this instrument, the patient should be placed in the Trendelenburg position and the peritoneum separated by forcing the umbilicovesical aponeurosis from behind the pubis; the bladder then appears and can be recognized by its parallel veins. It is then easy to pass two catgut sutures into the wall of the bladder, to render it tense, and to incise it.

Familial Syndactylism and Polydactylism.—Bonnet reports the case of a young woman who had six fingers on each hand; the thumb, index and little fingers were normal, but between the index and little fingers was an irregular mass shorter than the adjacent fingers and having three distinct nails. Roentgen examination revealed the presence in the triple finger of three metacarpal bones and three sets of phalanges. The patient, who came for the treatment of another condition, was able to make a living as a typist and would not consent to an operation to correct the malformation. She stated that she had two brothers and eight sisters and that three of her sisters presented exactly the same malformation; her mother, a maternal aunt, and some girl cousins had the same deformity but her two maternal uncles did not. Although only female members of the family had presented the condition during the last two generations, in the preceding generation it had appeared in numerous male members of the family; the malformation could be traced back to the seventh generation and had occurred so frequently that the family was known as the "six-fingered family."

Bulletins et Mém. de la Soc. Méd. des Hôpitaux, Paris

52: 1411-1446 (Oct. 25) 1928

*Specific Serotherapy of Streptococcal Infection. E. Manoussakis.—p. 1412.
*Irradiated Ergosterol in Rickets. P. Armand-Delille and J. Bertrand. —p. 1418.
Decerebrate Rigidity in Cataleptic Seizures. J. Tinel, H. Baruk and A. Lamache.—p. 1421.
Spontaneous Cure of Pulmonary Abscess. R. Cattan.—p. 1439.
*Vaccination with Diphtheria Anatoxin. M. Mozer, G. Mozer and E. Cofino.—p. 1443.

Transfusion of Blood from Persons Vaccinated with Streptococcus Toxin in Treatment of Severe Streptococcal Infections.—Manoussakis reports a case of very grave erysipelas of the face, a case of meningitis due to the hemolytic streptococcus, and two cases of streptococcal septicemia which showed marked improvement following transfusion of blood from persons previously vaccinated with streptococcus toxin. The author believes that this method of treatment is superior to the treatment with convalescent serum because streptococcal infection only rarely produces immunity and, when it does, the immunity is only toward one antigen. The only objectionable feature of the method is that it is difficult to find enough volunteers who will submit to progressive vaccination and then donate blood when it is desired.

Curative Action of Irradiated Ergosterol in Treatment of Rickets.—Armand-Delille and Bertrand have found that in rickets the calcification of the bones occurs much more slowly following the use of natural or artificial heliotherapy than after the administration of irradiated ergosterol. Although irradiated ergosterol is perfectly harmless and even produces improvement in the general condition of the patient, its action is so rapid that one must watch the patient carefully in order not to produce hypercalcification.

Vaccination with Diphtheria Anatoxin.—In a hospital containing 1,100 tuberculous children, Mozer et al. noted that the systematic vaccination of all entrants with diphtheria anatoxin resulted in a considerable reduction in the diphtheria morbidity. Under the influence of three injections of anatoxin the frequency of a positive Schick test dropped from 36 per cent to 4.5 per cent; a fourth supplementary injection reduced the percentage to 0.45.

Bull. et Mém. de la Soc. Nationale de Chirurgie, Paris

54: 1063-1088 (Oct. 27) 1928

*Tuberculosis of Adnexa, Uterus and Rectum. P. Picard.—p. 1066.
*Amputation in Tetanus. Arrivat.—p. 1071.

Tuberculosis of Uterine Adnexa, Uterine Fibroma and Rectum.—In a woman, aged 40, in whom a probable diagnosis of extra-uterine pregnancy had been made, Picard found a large fixed mass in which were included the adnexa and the uterus; it blocked the entrance to the lesser pelvis, projected into the abdominal cavity, and was completely enveloped by omentum. Removal of the adnexa, subtotal hysterectomy and resection of a segment of the sigmoid and rectum 6 cm. long, which was torn for a distance of 4 cm. in being separated from the mass, were performed and the intestine was closed by an end-to-end anastomosis. Macroscopic examination of the specimens showed manifest tuberculosis of the left adnexa with pyosalpinx, infiltration of three fourths of the circumference of the segment of intestine, and a uterine fibroma which was as large as the head of a fetus at term and which on section presented large caverns not communicating with the cavity of the uterus and containing the same manifestly tuberculous pus as the adnexa. Microscopic examination confirmed the macroscopic diagnosis. In all probability the condition began as a primary tuberculous salpingitis and extended secondarily to the uterine fibroma and the large intestine.

Amputation of an Extremity in Tetanus.—Eight days after an operation for tuberculous ostearthritis of the foot in a man, aged 21, symptoms of tetanus appeared. In spite of subcutaneous, intravenous and intraspinal injection of large doses of tetanus antitoxin (altogether 110 cc. of ordinary tetanus serum and 560 cc. of purified serum in doses of 5,000 units were administered), the patient's condition grew worse; although he expected a good functional result from the operation on the foot, the author finally amputated the leg as a life-saving measure. The patient had his last tetanic paroxysm five hours after the amputation; recovery took place.

Presse Médicale, Paris

36: 1313-1328 (Oct. 17) 1928

*Sulphur Products of Hemolysis. M. Loeper, J. Decourt and R. Garcin. —p. 1313.

Sulphur Products of Hemolysis.—From an experimental and clinical study, Loeper et al. conclude that in hemolysis four substances are liberated from the erythrocytes: derivatives of the pyrrol nucleus, amino-acids, sulphur and iron. By the liberation of these four substances several varieties of pigments may be formed: the pyrrol pigments, which are the pigments of the bile, the thio-amine pigments, which constitute the melanin group, and the ferric pigments, which are no longer albuminous. The erythrocyte, therefore, is the source of three groups of pigments whose chemical structure and fate are different. The sulphur products of hemolysis occupy an important place in the cycle of organic sulphur; they even seem to play a rôle in normal and pathologic melanogenesis.

36: 1329-1344 (Oct. 20) 1928

*Treatment of Hemorrhoids. G. Delater and R. I. Vendel.—p. 1329.
*Treatment of Ureteral Fistulas. J. Sénèque.—p. 1330.

Treatment of Hemorrhoids by Means of Sclerosing Injections.—During the past four years Delater and Vendel have been obtaining good results with Bensaude's method of treating hemorrhoids by means of sclerosing injections.

Treatment of Ureteral Fistulas by Roentgen Irradiation of Kidney.—Although nephrectomy is considered by many French surgeons to be the simplest and surest way of curing a ureteral fistula, Sénèque believes that permanent suppression of the function of the kidney by means of roentgen irradiation, as recommended by Klein, is preferable. The only possible criticism of the latter's experimental and clinical studies is that they give no information concerning the effect of irradiation of the kidney on neighboring organs. However, in the four cases in which this treatment has been applied to man, the function of the kidney was suppressed in a very short time and there were no harmful after-effects.

Progrès Médical, Paris

43: 1845-1892 (Nov. 3) 1928

*Etiology of Psychasthenia. N. N. Toporkoff.—p. 1857.
Treatment of Pulmonary Tuberculosis with Gold Salts. T. and J. Stéphani.—p. 1861.
Simplified Test Meal. W. Robin.—p. 1875.

Rôle of Syphilis in Etiology of Psychasthenia.—From the study of 109 cases of psychasthenia, Toporkoff believes that congenital syphilis plays an important rôle in its pathogenesis. In all cases of this condition he examines the entire family of the patient for evidence of syphilis. He does not subscribe to the current opinion that it is dangerous to suggest to a psychasthenic person that syphilis is possible in his case, on account of the hypochondriac tendency and the possibility of producing syphilomania. He habitually tells the patient that he has congenital syphilis, but he does not show the patient the result of the serologic examination, because he knows of one case in which a young neurasthenic girl threw herself under a train on the day that she saw the report of her positive Wassermann reaction.

Schweizerische medizinische Wochenschrift, Basel

58: 981-1004 (Oct. 6) 1928

*Dyspnea in Metastatic Tumors of Lung. Z. Gurwitsch.—p. 981.
Influence of Fructovegetable Diet on Viscosity of Blood, Hemoglobin and Blood Pressure. M. E. Bircher.—p. 987. C'td.
Treatment of Ozena. J. Kollarits.—p. 993.

Dyspnea in Metastatic Tumors of Lung.—Gurwitsch studied the symptoms in fifty-six cases of metastatic lung tumor in which the primary tumor was not in the respiratory tract. He found twenty-seven cases in which dyspnea was not present and twenty-nine cases in which it was present. In lymphangitis carcinomatosa the dyspnea, he believes, is caused chiefly by stenosis of the bronchi. The marked injection of the lymph vessels and the edematous saturation of the interstitial tissue exerts pressure on the adjacent alveoli, bronchi and vessels. He saw no cases in which the dyspnea could be explained purely by pressure by the metastatic nodules. This material contained three cases of uncomplicated lymphangitis carcinomatosa. From these it appears that the course may be slower than has been supposed.

Archiv für Schiffs- und Tropen-Hygiene, etc., Leipzig

32: 489-546 (Oct.) 1928

Diseases Caused by Protozoa in Llanos of Venezuela. W. A. Collier.—p. 489.
*Dermatitis Caused by Tree Poison. E. von Bassewitz.—p. 494.
Examinations of Cerebrospinal Fluid in Javanese and Chinese. H. Heinemann.—p. 500.
*Duration of Incubation in Malaria. O. Herrmann and A. Malinina.—p. 506.
Two Cases of Fasciola Gigantica Cob. in Man in Russia. S. W. Pigulewsky.—p. 511.
Origin of Malaria Pigment. W. Warasi.—p. 513.
Experiments in Action of Ascaris. T. Sakaguchi.—p. 517.
Relation Between Ascariasis and Tuberculosis. H. Ugami.—p. 518.
Relations Between A-Avitaminosis and Ascariasis. T. Hiraishi.—p. 519.
Prophylaxis of Clonorchiasis. K. Nagano.—p. 521.

Dermatitis Caused by Tree Poison.—A skin lesion resembling erysipelas with intense itching and burning and with swelling of the skin, going on in some cases to vesicle formation and ending with desquamation, is described by von Bassewitz. It occurs in naturally sensitive persons who have been in contact with or in the vicinity of a certain tree found in southern Brazil. The exact botanic classification of this tree is uncertain. It is commonly called *aroeira* and a number of authorities classify it as belonging to the genus *Schinus;* another classifies it as *Lithrea.* All parts of the tree appear to be rich in volatile oils. From 5 to 10 per cent of the population are sensitive to the noxa; others are wholly immune. The body temperature seldom rises to any considerable degree, but the general condition is greatly affected. At first the lesion is limited to the exposed parts of the body but it may become generalized by the serous contents of the broken vesicles or by the sweat. In rare cases, pustulous eruptions develop and the disease has been mistaken for smallpox. The exact cause of the dermatitis remains unknown.

Duration of Incubation in Malaria.—Herrmann and Malinina do not accept the possibility of a long period of incubation in malaria. Most cases of so-called first infection in the spring are, they believe, recurrences. A few cases may be caused by infected mosquitoes that have survived the winter.

Beiträge zur Klinik der Tuberkulose, Berlin

70: 341-464 (Sept. 11) 1928

Pneumonotomy for Pulmonary Abscess and Gangrene. L. Brauer.—p. 341.
Effect of Injury of Animal on Virulence of B C G Vaccine. L. Lange and K. W. Clauberg.—p. 346.
*Comparison Between Tuberculosis and Other Infections. Le Blanc.—p. 357.
Morphology and Biology of Tubercle Bacillus: I. Filtrable and Polymorphic Forms. O. Kirchner.—p. 375.
Id.: II. Study of Filtrable Forms in Guinea-Pigs. M. Lindemann and B. D. Li.—p. 380.
Id.: III. Nonacid-Fast Forms in Saponin-Glycerin Bouillon Cultures. O. Kirchner.—p. 385.
*Experimental Tuberculosis in Rats. K. Hagedorn.—p. 389.
Complement Fixation Reaction in Tuberculosis. M. Stein and M. Schachsuwarly.—p. 408.
Thoracoscopy and Cauterization in Lung Adhesions. G. Maurer.—p. 412.
Artificial Pneumothorax for Cavity Diagnosis. Trenti.—p. 420.
Subfebrile Conditions Without Demonstrable Organic Findings. F. Jahn.—p. 429.
Stenosis Breathing. A. J. Anthony.—p. 452.
Clinical Aspects and Pathogenesis of Diaphragmatic Hernia. G. Adamy.—p. 461.

Comparison Between Tuberculosis and Other Bacterial Infections in Man.—Since tuberculosis develops locally and generally in the same way as other bacterial infections, it should be studied as other bacterial infections are studied—in the clinic as well as in the laboratory. Too much weight has been given to pure laboratory investigation in tuberculosis research. In tuberculous as in other bacterial infections the development of metastases presupposes the presence of bacteremia, but a longer time is required to discover the metastases of tuberculosis than is required to discover the metastases of other bacterial infections; early diagnosis is possible only in the lung. Le Blanc emphasizes the fact that the comparison of tuberculous infection with other bacterial infections does not permit one to explain all infectious processes on the basis of allergy or to consider the latter as the most important factor in their development and course.

Experimental Tuberculosis in Rats.—Hagedorn found that both subcutaneous and intraperitoneal injections of bovine tubercle bacilli may produce tuberculosis in rats. The tuberculosis picture found in other animals, however, is not found in rats. Macroscopic examination reveals hypertrophy of the spleen and the formation of numerous pulmonary foci, but typical tubercles are only suggested;, histologic examination reveals the presence of numerous bubble cells, "schaumzellen," with rich lipoid deposits in the lung, spleen and liver. Pregnancy has no effect on the course of rat tuberculosis. One-tenth cubic centimeter of old tuberculin gives a skin reaction only in exceptional cases. The serologic observations (complement deviation) usually correspond to the postmortem observations.

Beiträge zur klinischen Chirurgie, Berlin

144: 1-160 (Aug. 31) 1928

*Problem of Regeneration of Tissue: Influencing Bone Regeneration Chemically. H. Burckhardt.—p. 1.
Localized Osteodystrophy of Spinal Column: Third Cervical Vertebra. H. Hellner.—p. 42.
One-Stage Plastic Operation for Epithelioma of Nose and Contiguous Areas. H. Kurtzahn.—p. 50.
*Chondromatosis of Joints: Six Cases. P. Rostock.—p. 58.

*Wound Healing Following Amputation of Penis for Carcinoma and Cleaning Out of Both Inguinal Canals. C. B. Strauch.—p. 81.
*Surgery of Sphincter Ani: Experimental Study. E. Melzner.—p. 87.
Dilation of Stomach and Bowel, with Muscular Hyperplasia as Cause of Relaxation of Diaphragm. H. H. Kalbfleisch.—p. 116.
*Experimental Study of Intestinal Occlusion: Significance of Duodenal Fluids. P. Seulberger, K. Brandes and A. Beykirch.—p. 135.
*Hyperglycemia and Glycosuria with Injury of Pancreas Resulting from Inflammation of Gallbladder. F. Bernhard.—p. 158.

Regeneration of Bone.—The effect of the injection of marrow extract, bone meal, Witte's peptone, sodium chloride solution, blood, embryonal extract, lactic acid, muscle extract and calcium fluoride on bone regeneration following fractures was studied experimentally by Burckhardt. The results were, on the whole, good; the best and most outstanding results were obtained with marrow extract plus bone meal. Subperiosteal injections did not yield results comparable with those obtained by injection into the regenerating tissue itself. Rabbits were used in these experiments. Injection of rabbits' bone marrow did not cause allergic symptoms and was superior to injection of calves' marrow. The injections had to be continued for long periods of time. Maximum results were obtained in about three months. One injection only proved ineffective. The same was true of occasional injections. Biweekly injections at regular intervals were most effective. The addition of bone meal to any other substance increased its effectiveness, but bone meal and marrow extract were the best combination. A 2.5 per cent solution of Witte's peptone, injected daily, was followed by a considerable increase in callus formation. Further study of peptone combined with bone marrow is now in progress and will be reported on later. Blood and embryonal tissue extracts, combined with bone meal, yielded results second only to those obtained with marrow extract and bone meal. Burckhardt stresses the importance of combining an organic with inorganic substance if the best results are to be obtained.

Chondromatosis of Joints.—Rostock reports in detail six cases—only one of which came to operation—and analyzes sixty-one cases, distributed as to joints as follows: knee, thirty-five cases; elbow, eleven cases; hip, six cases; shoulder and hand, three cases each; foot, two cases; metacarpal, one case. Seven cases occurred between the ages of 11 and 20; twenty between 21 and 30; twelve between 31 and 40; six between 41 and 50; seven between 51 and 60; three between 61 and 70, and one between 71 and 80. In five cases the age was not known. Pain on motion, restricted motion, grating and grinding noises are the principal symptoms. The cartilage is formed in the surrounding soft tissues of the joint, not from the joint cartilages. The cause of the disease is said to be a failure of mesenchyme differentation. The treatment has varied with different operators from arthrotomy to resection. Recurrence was noted in ten cases. The number of pieces of cartilage removed has varied from a few to many hundreds. In one recurrent case, 1,047 separate pieces were removed. In some of the recurrent cases the joint was resected to produce a permanent result.

Carcinoma of Penis.—Strauch discusses particularly the question whether the inguinal lymph nodes should be removed when the penis is amputated for carcinoma. The double operation was performed in forty-seven of sixty-five cases available for analysis. Only sixteen patients had primary healing of the inguinal wounds and were discharged on the sixteenth day; nine had secondary healing after thirty-two days; in twenty cases there was more or less suppuration, with healing after thirty-six days. In six of these cases there occurred an erysipelatous inflammation of the inguinal wounds, and in one case of the penile wound. These results undoubtedly are indicative of a previous bacterial infection of the inguinal lymph nodes. The experience of many operators has shown that metastasis to the inguinal lymph nodes in cases of carcinoma of the penis occurs relatively late. If removal of these nodes at the time of the amputation is indicated, the inguinal wounds should be left wide open and dressed with 10 per cent iodoform gauze even though the time of healing is lengthened. Otherwise, the lymph nodes may be removed secondarily, after the local inflammation has subsided.

Surgery of Sphincter Ani.—Melzner determined by animal experiments that postoperative loss of function of the sphincter ani following section may be avoided if the divided sphincter is reunited, either primarily or secondarily. The result is equally good in either case, but the wound must heal by primary union; the nerve supply must not have been injured.

Death from Intestinal Occlusion.—Seulberger et al. noted that their experimental animals died as a result of their liver injuries and a general vasomotor paralysis. The combined or reciprocal action of bile and pancreas secretion has an important part in bringing about a fatal result. Bacterial infection plays a rôle only in chronic cases of obstruction.

Hyperglycemia and Glycosuria in Gallbladder Disease.—In two cases of empyema of the gallbladder, Bernhard noted an increase of blood and urine sugar, indicating involvement of the insular tissue of the pancreas. The author deems this of importance in attempting to explain the etiology of diseases of the pancreas. Evidently, the infection was conveyed to the pancreas from the gallbladder by the blood and lymph vessels. The two cases reported were at first regarded as being diabetes mellitus with associated gallbladder disease. They were treated dietetically and with insulin, but without any result. When the symptoms of the gallbladder disease became prominent, cholecystectomy was done in both cases. Soon afterward the urine became sugar free and the blood sugar became normal and remained so even after the administration of 50 Gm. of dextrose.

144: 163-312 (Sept. 21) 1928. Partial Index

Thrombosis and Embolism. A. Borchard.—p. 163.
*Embolism of Lung Following Surgical Operations. A. von Tempsky.—p. 170.
Clinical Course of Sarcoma and Etiology of Malignant Growths. H. Simon.—p. 178.
Epilepsy. L. Schönbauer.—p. 183.
Roentgen Irradiation of Brain Tumors. H. Rahm and L. Heidrich.—p. 186.
Ankylosis of Jaw and Micrognathy. A. Fromme.—p. 195.
Surgical Treatment of Bronchiectasis. H. Hauke.—p. 207.
Hernia and Trauma of Diaphragm. F. Neugebauer.—p. 213.
Phlegmon of Stomach; Clinical Course and Roentgen Picture. K. Gütig.—p. 225.
Phlegmon of Ileum. F. Neugebauer.—p. 228.
Operation for Gastric Ulcer in Exsanguinated Patients. F. Pendl.—p. 231.
Ulcer of Duodenum in Children. H. Bona.—p. 234.
Patent Omphalo-Enteric Duct and Umbilical Hernia. A. Most.—p. 236.
Rupture of Single Kidney. E. Melchior.—p. 241.
Relation of Kidney to Amino-Acid Excretion. W. Krech.—p. 243.
Retroperitoneal Lipoma; Recurrence with Metastases. F. Katz.—p. 265.
Prostatectomy. W. Hirt.—p. 266.
Arthritis Acromio-Clavicularis; Diagnosis and Treatment. F. Erkes.—p. 270.
*Etiology of Contracted Flatfoot. S. Weil.—p. 280.
Supracondyloid Process of Femur. O. Hahn.—p. 283.
Tuberculosis of Trochanter. M. Weiss.—p. 290.
Sprengel's Deformity. H. Heidecker.—p. 291.
Klippel-Feil's Disease. H. Heidecker.—p. 303.
Plastic Surgery. F. Schreiber.—p. 307.

Incidence of Embolism of Lung After Surgical Operations.—The apparent increase of these cases is ascribed by Tempsky to better diagnosis rather than to an actual increase. Among 1,458 laparotomies done for carcinoma of the stomach, there were forty-five cases of thrombosis and embolism, an incidence of 3.8 per cent. Twelve of these, an incidence of 0.8 per cent, were cases of pulmonary embolism, in which death occurred. Resection operations yielded seventeen cases of thrombosis and embolism and five cases, all fatal, of pulmonary embolism. Gastro-enterostomy was followed by thirteen cases of thrombosis and embolism, and two cases, both fatal, of pulmonary embolism. Exploratory laparotomy was followed by twelve cases of thrombosis and embolism and three fatal cases of pulmonary embolism. On the average, death occurred in pulmonary embolism on the ninth day, the earliest occurring on the fourth day, the latest on the twenty-first day after operation. Thrombosis of the lower extremities occurred in only 1 per cent of the cases and more often on the right side than on the left, which is contrary to the observations reported by others. Once bilateral thrombosis was noted, and twice first one side then the other became thrombosed. An appreciable increase in the pulse rate before the occurrence of thrombosis was noted in 13.3 per cent of the cases. Thrombosis of the extremities was not found to be a forerunner of pulmonary embolism. Thrombosis of pelvic veins was discovered at necropsy in 25 per cent of the cases. Among 506 operations for

carcinoma of the rectum, there were twenty-seven cases of thrombo-embolism with seventeen deaths from pulmonary embolism, one as early as the fourth, the latest on the tenth postoperative day. Amputation and resection, by the sacral route, resulted in twenty-three cases of thrombo-embolism, with fifteen deaths from pulmonary embolism, and the operation establishing an artificial anus resulted in four cases of thrombo-embolism with two deaths from pulmonary embolism. Cases in which amputation and resection were done by the combined method remained free from these complications. Among 1,767 laparotomies for appendicitis, there were twenty-nine cases of thrombo-embolism and four of fatal pulmonary embolism. The figures for chronic, acute and perforating appendicitis were, respectively, five, seven and fourteen, with death from pulmonary embolism occurring only in four cases of the perforative type. Thrombosis of the portal vein occurred in only 4 per cent of all types of cases of appendicitis and in 7 per cent of the acute type. As to the possible injurious effect of intravenous injections in causing thromboses, the author vigorously denies this; neither does operative trauma play any part. Not one case of fatal pulmonary embolism occurred among 831 operations for gastric ulcer, but the percentage of such deaths following hernia operations was 0.2 per cent, restricted, however, to the incarcerated hernias. As Tempsky views this question, cachexia and excessive obesity are factors in the occurrence of post-operative embolism. Infection is of far less importance, although it must not be disregarded, for, undoubtedly, there are infectious as well as mechanical causes for this distressing complication.

Etiology of Contracted Flatfoot.—Weil advances the theory that contracted flatfoot is the result of a proprioceptive reflex. Flatfoot causes changes in length, shortening and widening of muscles, which, in turn, excites a reflex, such as occurs when the patellar tendon is tapped. However, no explanation is offered as to why contraction occurs in some cases and not in others, nor why it does not occur with pes varus. It has been asserted that this contraction is of nervous origin. Injection of procaine has released it, according to some observers, but Weil was able to achieve this result in but a few cases. Therefore he concludes that the cause of this condition is still shrouded in mystery.

Dermatologische Wochenschrift, Leipzig

87: 1259-1314 (Sept. 15) 1928

Boeck's Sarcoid at Border of Nail. R. Habermann.—p. 1259.
*Five Cases of Exfoliative Erythrodermia with Cure. P. Unna, Jr.—p. 1263. C'td.
Telangiectatic Granuloma. E. Delbanco.—p. 1268.
Histology of Skin of Axilla. C. L. Karrenberg.—p. 1275. C'td.
*Pemphigoid of the New-Born and Exfoliative Pemphigoid. W. Pockels.—p. 1279. C'td.
*Primary Exogenous Tuberculous Infection of Nasal Mucous Membrane: Immunization. P. Wichmann.—p. 1282.
Microstomia Following Syphilitic Interstitial Cheilitis. C. Bruck.—p. 1286.
Case of Gumma Sclera. H. Meves.—p. 1288.
Tertiary Syphilitic Symptoms After Therapeutic Malaria. H. Ritter.—p. 1290.
Natural Transmissibility of Inoculation Malaria. O. Fischer.—p. 1292.
Choked Disk in Metastatic Gonorrhea of Eye. E. Schindler.—p. 1297.
Constant and Measurable Sequelae of Castration. W. Blotevogel.—p. 1299.

87: 1315-1342 (Sept. 22) 1928

Hydrogen Peroxide as Depigmentory Remedy. K. von Berde.—p. 1315.
*Five Cases of Exfoliative Erythrodermia with Cure. P. Unna, Jr.—p. 1317. C'cn.
Histology of Skin of Axilla. C. L. Karrenberg.—p. 1321. C'cn.
*Pemphigoid of the New-Born and Exfoliative Pemphigoid. W. Pockels.—p. 1323. C'cn.

Five Cases of Exfoliative Erythrodermia with Cure.—The results of modern research indicate that generalized exfoliating erythrodermia or pityriasis rubra Hebra-Jadassohn is not a disease sui generis but an injury of the vegetative nervous system which may arise from various causes. Unna's five cases confirm this view; first because the primary disease differed (some were cases of primary erythrodermia of the pityriasis rubra or the dermatitis exfoliativa Wilson-Brocq type, others were cases of secondary erythrodermia following seborrheic eczema and psoriasis); secondly because a relatively simple external treatment acting on the autonomic nervous system sufficed to remove all the symptoms, those of the internal organs as well as those of the skin. The treatment was based on the idea that the disease picture was caused mainly by vascular paralysis and that if the peripheral vascular system could be relieved most of the symptoms would disappear. The heart and the vessels of the skin were the immediate objects of the treatment. The most important active ingredient of the ointment used was epinephrine.

Pemphigoid of the New-Born and Exfoliative Pemphigoid.—Seven cases of exfoliative pemphigoid (Ritter's dermatitis exfoliativa) were seen by Pockels in an epidemic of seventy cases of pemphigoid of the new-born. In all seven cases the exfoliative condition developed from the usual pemphigoid of the new-born. The character and location of the vesicles did not differ in any respect from those of the benign disease. The only clinical difference was the epidermolysis. *Staphylococcus aureus* was obtained in pure culture in both the simple and the exfoliative forms.

Primary Exogenous Tuberculous Infection of Nasal Mucous Membrane: Immunization.—On the basis of 100 cases of primary exogenous tuberculous infection of the nasal mucous membrane, Wichmann found that immunizing processes did not set in until spread of the infection through the lymph glands had taken place. Destruction of cartilage and involvement of the skin occurred. He does not believe that the skin plays an important rôle in the production of immune bodies in tuberculosis; he thinks that the fact that primary infection of the skin represents a favorable mode of infection is owing to the slow development of the infection in a milieu that is unfavorable to it, so that the organism has time to accommodate itself. In twenty-two of the cases the resistance acquired was not sufficient to prevent development of large foci in the lungs. Such pulmonary foci may flare up on the occasion of a lowering of immunity. Wichmann saw four such occurrences, with fatal ending.

Deutsche Zeitschrift für Chirurgie, Leipzig

212: 1-152 (Oct.) 1928. Partial Index

*Hypophysis and Sugar Content of Body. W. Klug.—p. 5.
Pneumolysis in Treatment of Abscesses of Lung. R. Nissen.—p. 13.
Surgical Treatment for Lung Abscess; Use of Paraffin Injections. K. Middeldorpf.—p. 17.
Foreign Body Abscesses of Lung. R. Nissen and K. Middeldorpf.—p. 52.
*Congenital Bronchiectases in Siblings and Uniovular Twins. O. von Lossow.—p. 71.
Effect of Muscle Action on Form of Joint; Molding Knee Joint to Resemble Elbow Joint. K. Fischer.—p. 81.
Mechanics of Knee Joint. H. Tretter.—p. 93.
Healing of Fractures: Effect of Irradiated Ergosterol on Bone Regeneration. R. Vara-Lopez.—p. 101.
Histology and Pathogenesis of Dupuytren's Contracture. C. Iklé.—p. 106.
Motor Functions of Appendix. L. Ulrich.—p. 119.
*Cysts of Spleen; Case with Calcification of Wall of Cyst. H. Gatersleben.—p. 139.

Sugar Curve as Diagnostic Aid in Disease of Hypophysis.—Klug determined by experiments on animals that when the anterior lobe of the hypophysis is removed there occurs an increased deposit of fat, especially in the abdominal parieties, and later an increase in the sugar content of the body. This is ascribed to the fact that the carbohydrate function of the liver becomes impaired by deposition of fat so that sugar remains unconverted and is poured into the circulation as sugar. Hyperglycemia and glycosuria may therefore be regarded as manifestations of anterior hypophysis lobe insufficiency. The author urges that the sugar tolerance be regarded as an important diagnostic aid in diseases of the hypophysis.

Rôle of Heredity in Congenital Bronchiectases.—Lossow relates three cases of bronchiectasis occurring in siblings, twins, aged 18, and a brother (survivor of a pair of twins), aged 16, and concludes that they furnish an adequate basis for assuming that heredity plays a rôle in the etiology of this disease. The grandfather of these children died of some lung disorder associated with much expectoration. The author concludes that these children were born with a predisposition to bronchiectasis. The surviving twins also presented much evidence, anatomic and clinical, of being uniovular twins, such as similar deflection of the nasal septum, drumstick fingers on the left hand, contracting similar diseases simultaneously and belonging to the same blood group; but one of them was definitely right-handed, whereas the other was occasionally left-

handed. This one also suffered from stammering, on occasions of excitement or emotionalism, up to the age of 15. The right-handed twin never stammered, nor had she any other speech disturbance.

Unilocular Cyst of Spleen.—Gatersleben's patient complained of weakness, considerable loss of weight and pain in the back and upper abdomen. On roentgen examination, a single, large cyst of the spleen was disclosed, the first instance of its kind on record, according to the author. When the spleen was removed and the cyst examined, it was found that the wall of the cyst was calcified; hence its showing in the roentgenogram. The contents of the cyst were detritus and a considerable amount of cholesterol. Bacteria were absent.

Jahrbuch für Kinderheilkunde, Berlin

121: 111-220 (Sept.) 1928

Mineral Content and Acid-Base Equilibrium of Infants' Serum. A. Nitschke and G. M. zu Hörste.—p. 111.
Iso-Agglutinins in Breast Milk. B. Epstein and E. Podvinec.—p. 123.
Icterus Neonatorum Following Phenomenon of Iso-Agglutination. G. Lenart.—p. 134.
*Cholera Infantum. B. P. B. Plantenga.—p. 156.
*Early Diagnosis of Whooping Cough from Blood Picture. P. Leitner. —p. 164.
Sea Climate and Leukocyte Picture. W. Smidt.—p. 180.
"Roentgenograms of Recurrent Epituberculous Infiltration": Addendum. W. Koelzer.—p. 209.

Colon Bacillus Toxicosis of Infants (Cholera Infantum).—Specific serotherapy holds the chief place in Plantenga's treatment of cholera infantum. The serum is prepared by immunizing horses with a large number of strains of colon and paracolon bacilli, most of which are cultivated from the urine of children with nephropyelitis. The serum is injected subcutaneously between the scapulae as early as possible after the appearance of toxic symptoms. The dose is from 20 to 30 cc. If improvement has not set in within forty-eight hours, a further 10 cc. may be injected. Small quantities of water are given between feedings, but hypodermoclysis is not practiced, since, in Plantenga's opinion, the loss of skin elasticity is caused by the action of toxins, not by dehydration. A case illustrative of the effects of the treatment is cited and the colon bacillus origin of the disease is discussed.

Early Diagnosis of Whooping Cough from the Blood Picture.—Leitner calls attention to the early hyperleukocytosis in whooping cough. It is found both in infants and in older children and varies widely in individual cases; the average counts are between 20,000 and 35,000, but he has known uncomplicated cases with counts of from 60,000 to 84,000 in the convulsive stage. With complications the leukocytosis is much higher than the average in uncomplicated cases. It is a bad prognostic sign if the count is comparatively low when complications are present. A further early sign is an increase of lymphocytes at the expense of polymorphonuclear leukocytes.

Klinische Wochenschrift, Berlin

7: 1941-1988 (Oct. 7) 1928

Vitamins in Earliest Period of Life. E. Vogt.—p. 1941.
Chemical Examination of Tissues and Old Age. M. Burger and G. Schlomka.—p. 1944.
Resorption of Bile Acids in Normal and Inflamed Gallbladder. F. Rosenthal and H. Licht.—p. 1952.
*Milk Secretion and Midbrain. W. Riese.—p. 1954.
Acidotic or Alkalotic Metabolic Disturbance in Patients with Carcinoma? E. Schneider and H. Achelis.—p. 1955.
Skin Sensitiveness to Substances Having Structure of Quinone. R. L. Mayer.—p. 1958.
Apparatus for Demonstrating Alcohol in Urine. P. Liebesny.—p. 1959.
Beginning of Pulmonary Tuberculosis in Adults. K. Henius.—p. 1960.
Keratohyalin. L. Nürnberger.—p. 1961.
Glycogen in Kidneys of the New-Born and of Nondiabetic Persons; So-Called Glycogen-Free Organs. S. Diamantopoulos.—p. 1962.
Allergy in Workers in Saw Mills. K. Bahn.—p. 1963.
Evaluation of Centrally Active Cardiac and Circulatory Remedies. H. von Hoesslin.—p. 1964.
Biologic Bases of Place of Man on the Earth. H. Petersen.—p. 1968.

Milk Secretion and Midbrain.—The motor symptoms and character changes typical as sequelae of epidemic encephalitis occurred in Riese's patient after an attack of this disease at the age of 19. Menstruation became irregular, sexual excitability was exaggerated, and a milky fluid was secreted by both breasts. When Riese saw the patient, she was 25 years old and the milk secretion had been present for four or five years. She had never been pregnant. The woman's symptoms pointed to a lesion of the midbrain and Riese suggests that not only milk secretion but also other phenomena of pregnancy and the puerperal state may have their origin in the midbrain.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

80: 1-78 (Sept.) 1928

*Gynecology and Diseases of Eye. E. Vogt.—p. 1.
Puerperal Gangrene. E. C. Lork.—p. 17.
Hysterectomy for Chronic Gonorrhea. F. Sieber.—p. 19.
Carcinomatous Leukoplakia of Portio. H. Hinselmann.—p. 23.

Gynecology and Diseases of Eye.—The onset of the menarche, Vogt says, may exert a favorable influence on inflammatory and hemorrhagic diseases of the eye. This he explains on the assumption that menstruation rids the body of certain toxins (menotoxins). In the presence of disease of the eye, it may be desirable to hasten the appearance of the first menstruation. Suppression of the menstruation sometimes has a bad effect on eye diseases. Albuminuric retinitis occurs in nephropathy of pregnancy as well as in true chronic nephritis and nephrosis. It is most frequent in multiparas and appears usually after the sixth or seventh month. If it appears in the first six months, it is an indication for the interruption of the pregnancy. When it appears later, opinion as to the proper procedure is divided. Vogt believes it better to wait and interrupt the pregnancy only if the eye lesion becomes worse. If after the evacuation of the uterus the retinitis does not entirely clear up, future pregnancies should be avoided. Eclamptic amaurosis in itself need cause no particular concern. The pregnancy should be interrupted immediately in nearly all cases of optic neuritis. Only in exceptional cases is expectant treatment permissible, under close observation, till the child is viable. Future pregnancies must be avoided. Operation on the eye during pregnancy leads to abortion in at most a third of the cases, but it is always advisable when operating on a pregnant woman to avoid the time at which the menstrual period would have fallen if she had not been pregnant, since at this time the uterus is more sensitive. Hemorrhages into the eye during labor need not cause anxiety, even when copious. The menopause sometimes has a bad effect on diseases of the eye, perhaps because of increased blood pressure, perhaps because of retention of menotoxins. The possible effect on a coexisting eye lesion should be taken into account when the establishment of an artificial menopause is under consideration.

Monatsschrift für Kinderheilkunde, Leipzig

40: 193-288 (Sept.) 1928

*Primary Tuberculosis of Middle Ear in Early Infancy. H. Kleinschmidt and P. Schürmann.—p. 193.
Differential Diagnosis of Bronchial Asthma in Early Childhood. A. Horwitz-Lauterbach.—p. 216.
Immunologic Studies in Pneumococcus Infections. W. Pockels.—p. 238.
Colon Bacillus Pyuria. A. Adam.—p. 251.
*Intestinal Flora of Breast-Fed Premature Infants. A. Seugenhoff.—p. 263.
*Tuberculin Sensitiveness in the Child, Particularly in Scrofulosis. E. Harmstorf.—p. 270.
Determination of Fragility of Erythrocytes with Minimal Amounts of Blood. H. Schadow.—p. 276.

Primary Tuberculosis of Middle Ear in Early Infancy.—In the three cases reported by Kleinschmidt and Schürmann the disease appeared between the sixth and eighth weeks of life. The first symptom was swelling of the glands in front of and beneath the ear. Running of the ear soon followed and granulations appeared in the auditory passages. In two cases there was facial paralysis. The Pirquet skin test was positive. One child died at the age of 3½ months with symptoms of tuberculous meningitis; another child succumbed to cachexia after severe attacks of nasal pharyngitis and erysipelas. The third child had suppuration of the cervical glands from secondary infection by streptococci, resulting in the formation of a fistula. The source of infection remained undiscovered in spite of the fact that the three cases occurred in the course of one week in the same lying-in hospital. Necropsy was performed in the two fatal cases. The topography of the oldest and most extensive lymph gland changes pointed definitely to the right middle ear as the primary localization of infection in the first case. The second case appeared to be one of simultaneous primary infection of the middle ear and of the intestine. The anatomic conditions for passage of bacilli through the eustachian tube are

better in the first weeks of life than later. Primary tuberculosis of the middle ear in adults is not known.

Intestinal Flora of Breast-Fed Premature Infants.—Sengenhoff found that on the occasion of parenteral infections and acute nutritional disturbances in breast-fed premature infants *Bacillus bifidus* is frequently replaced in the stool flora by *Bacillus coli*. The completeness of this substitution parallels the severity of the symptoms.

Tuberculin Sensitiveness in the Child, Particularly in Scrofulosis.—Twenty-six children with tuberculosis of the hilum glands, of the lungs, bones, etc., were compared by Harmstorf with seventeen scrofulous children (keratitis eczematosa or phlyctenae of long standing) as to tuberculin sensitiveness. No difference was found.

Strahlentherapie, Berlin

30: 1-196 (Sept. 10) 1928. Partial Index

*Indications for Roentgen Treatment of Malignant Tumors. R. Werner. —p. 1.
*Results of Irradiation of Ovaries on Human Offspring. W. Schmitt.—p. 24.
Relations Between Pituitary and Genital Apparatus. L. D. Podljaschuk. —p. 65.
Influence of Roentgen Rays on Diffusion and on Permeability of Cell Membrane. K. Kovács.—p. 77.
Sea Climate Therapy. O. Kestner.—p. 123.
Research on Sea Climate. F. Müller.—p. 130.
Absorption Spectrum of Blood. R. Suhrmann and W. Kollath.—p. 145.

Indications for Roentgen Treatment of Malignant Tumors.—In cases of brain tumor in which immediate danger does not exist, roentgen treatment, combined where advisable with decompression trepanation, may be given a trial. Many brain tumors thus treated have retrogressed well and remained symptom-free for years. The same is true of tumors of the pituitary. Werner has seen metastatic carcinomas and sarcomas of the spine disappear under roentgen irradiation. Gliomas of the eyeball have in some cases responded well. The treatment must be carried out with great caution. Tumors of the nasopharynx often retrogress with surprising rapidity under irradiation. Tumors of the upper jaw, on the other hand, are for the most part refractory to the roentgen ray. Sarcoma of the tonsil responds to irradiation much better than does carcinoma. In malignant tumors of the lower pharynx concentric roentgen or radium irradiation, using a number of fields, is the method of choice. Radium, direct internal or combined internal and external irradiation, is the only thing that has given relatively good results in carcinoma of the buccal mucous membrane. Werner recommends trying the effect of external radium treatment before operating on sarcoma of the sternum or ribs. In carcinoma of the esophagus, roentgen irradiation should be given with small doses only and at long intervals. The immediate results of roentgen irradiation of mediastinal tumors is very good; the permanent results are uncertain. Radium is somewhat better in cases of malignant tumor of the thyroid in the uppermost part of the mediastinum. In carcinoma of the bronchi and lungs, roentgen treatment can bring improvement of long duration but the doses must be small. Intensive irradiation may cause fatal hemorrhage. Metastatic tumors in the gallbladder and the lungs react well to the roentgen ray—better than primary tumors. Werner believes that in inoperable tumors of the gastro-intestinal tract amelioration may sometimes be obtained by small daily doses of roentgen rays. He has seen a recurrence of carcinoma of Vater's papilla disappear permanently after roentgen treatment. The only intestinal localization of carcinoma in which roentgen treatment has had any considerable success is the sigmoid flexure. In carcinoma of the rectum, preoperative roentgen irradiation improves conditions for operation. Malignant tumors of the prostate, particularly sarcomas, are susceptible to considerable improvement from roentgen treatment alone or (even better) combined with insertion of radium needles. Roentgen treatment, carried out with great patience, has given some worth-while results in carcinoma of the bladder. Some good results have been achieved by irradiation of sarcoma and carcinoma of the ovary. In carcinoma of the portio, preoperative treatment is best given with radium, postoperative treatment with the roentgen ray. He believes that this triple treatment has a great future.

Results of Irradiation of Ovaries on Human Offspring.—Schmitt reports on forty-two pregnancies in twenty-five women who had undergone roentgen irradiation of the ovary. There were three cases of conception within three months after irradiation to obtain permanent cessation of menstruation. In two of the cases the conception followed sterility of seven and ten years, respectively. One of the children is well developed and healthy, one is somewhat underdeveloped physically, and one has a metabolic disturbance. Of sixteen pregnancies in eleven women in whom a considerable period intervened between irradiation for permanent amenorrhea and conception, three ended in aboration. (The present rate in Germany is one abortion to three births.) Twelve of the thirteen living children born in this group were very well developed and presented no abnormalities. One child was born prematurely and died at the age of 5 days. At necropsy, no defects in development were found. Two children died of tuberculosis in the first and second years. Six of the ten surviving children were examined from one to five years after birth; they showed no gross disturbances of development. One child presented a stereotyped rocking movement of the head when sitting. Seventeen pregnancies were observed in eight women after the use of small doses of roentgen rays to regulate menstruation. The interval between the irradiation and the first conception was from ten months to four years and ten months. Twelve of these pregnancies resulted in the birth of a living child, four of whom were reported as weak at birth, but none of whom presented anomalies. In one child a heart defect, probably congenital, was later noted. One child died of intestinal catarrh at the age of 3 months. Ten of these children were examined from one and one-half to six and three-fourths years after birth. All except the child with heart disease were physically and mentally normal. Four pregnancies occurred in three women who were irradiated with the aim of producing temporary amenorrhea. All went to term and resulted in living children, fully developed and without abnormality. One woman was subjected to so-called stimulating irradiation of the ovaries. Two pregnancies followed four months and one year and five months, respectively, after the treatment. The first child appeared strong at birth but died with "convulsions" at the age of 13 days. The second child was premature but is developing well. Fourteen of the thirty-five children born alive were boys and twenty-one were girls.

Zentralblatt für Chirurgie, Leipzig

55: 2689-2752 (Oct. 27) 1928

A New Model of Eiselberg's Splint for Fractures of Leg. R. Demel and H. Kunz.—p. 2690.
Appendicitis Complicating Measles. H. Burckhardt.—p. 2693.
Error in Diagnostic Localization of Renal Calculus. G. H. Feist.—p. 2693.
*Flatfoot and Multiple Sclerosis. F. Peyser.—p. 2695.

Flatfoot and Multiple Sclerosis.—Peyser stresses the importance of subjecting persons with painful flatfoot to a careful neurologic examination. He cites two cases in each of which the sole complaint was painful flatfoot. All known measures for giving relief were tried but proved futile. Finally, in the first case cited, the pronounced atrophy of the leg muscles roused Peyser's suspicions. A neurologic examination was made and all the other pathognomonic symptoms of multiple sclerosis were found. In the second case, such an examination was made as soon as the patient presented himself. It, too, was positive.

Zentralblatt für Gynäkologie, Leipzig

52: 2433-2496 (Sept. 22) 1928

*Value of Determination of Bilirubin and Diastase Values in Pregnancy, Labor and Puerperium. W. Schmidt.—p. 2434.
Histology of Polypi of Mucous Membrane of Uterus. O. Hintze.—p. 2439.
Mechanism of Cohabitation Hemorrhages in Carcinoma of Portio. H. Hinselmann.—p. 2450.
Operation for Vaginal Cancer with Resection of Segment of Rectum by Extended Vaginal Method. J. Frigyesi.—p. 2452.
Puerperal Gangrene of Uterus. M. Speiser.—p. 2458.
Elephantiasis Vulvae. I. von Büben.—p. 2466.
Biology of Leukocytes of Vaginal Secretion; Colloidal Chemical Staining. M. D. Guttner.—p. 2469.
Hemostasis in Abdominal Cesarean Section. R. Podkowa.—p. 2473.

Value of Determination of Bilirubin and Diastase in Pregnancy, Labor and Puerperium.—Applying van den Bergh's test in sixteen healthy women in the ninth or tenth

month of pregnancy, Schmidt found no basis for the idea that severe demands are made on the liver during pregnancy. During labor, on the other hand, increased indirect bilirubin values were found in some cases. In three cases of hyperemesis, the direct reaction was positive in one and the indirect values were increased in all. It is uncertain whether the increased values were due to injury to the reticulo-endothelial system or to vagotonic influences on the motility of the bile tract. In simple nephropathia gravidarum the values were normal in most cases; the few cases with direct positive reaction had a worse prognosis. In eclampsia the direct reaction was not always present; when it was present, the cases were severe. The van den Bergh test is of no value in the differential diagnosis of hepatic diseases in pregnancy, nor does it give any information as to etiology. In further studies Schmidt determined the diastase values in the blood plasma, urine and amniotic fluid in pregnant, parturient and puerperal women. Except with icterus and hydrops gravidarum, the urine and blood diastase values were normal in pregnancy. In healthy women in labor, abnormal values were not found, but in seven of ten parturient women with eclampism or eclampsia the values were raised or at the upper limit of normal. In all of the eleven parturient women with some complication of pregnancy, the values in the blood and amniotic fluid (when the latter was examined) were normal or subnormal. In the puerperium the urine and blood diastase values were normal or approximately so in all cases. It appears that the pancreas is sympathetically involved in complications of pregnancy more often than has been supposed.

Nederlandsch Maandschrift v. Geneeskunde, Leyden

15: 195-271, 1928

Dysostosis Cleidocranialis. C. W. Bisdom and D. Mulder.—p. 195.
Spirochaeta Pallida in Brain in Paresis. C. G. Aars.—p. 207.
*Renal Function in Diabetic Coma. P. van Paassen.—p. 227.
Can Recovery Take Place in Niemann-Pick Type of Splenohepatomegaly? J. Munk.—p. 266.

Renal Function in Diabetic Coma.—Van Paassen studied the functioning of the kidney in sixteen cases of diabetic or prediabetic coma and for comparison in four cases of grave acidosis without disturbances of consciousness and one case of diabetic coma with chronic nephritis. Disturbance in the function of the kidney in coma was indicated by increased blood urea with diminished urinary urea, by decreased excretion of ammonia and acid valencies and by blockade phenomena, such as high grade hyperglycemia with but little sugar in the urine, an altered relation between ketonemia and ketonuria to the disadvantage of the latter, and by disturbed elimination of phenolsulphonphthalein. There was no difference as regards these phenomena between the cases with recovery and those in which lasting improvement was not obtained. In addition, water excretion was disturbed. This phenomenon appeared during treatment and was the result of the large doses of insulin.

Nederlandsch Tijdschrift v. Geneeskunde, Haarlem

72: 4751-4890 (Sept. 29) 1928

*Syphilis of the Lungs. J. Hekman.—p. 4754.
Filtrable and Invisible Stages of Micro-Organisms. P. C. Flu.—p. 4764.
*Blood Groups and Tuberculosis. P. J. L. de Bloeme.—p. 4775.
*Prognosis of Pulmonary Tuberculosis in Adults. B. H. Vos.—p. 4784.
Importance of Preventive Measures in Home in Campaign Against Tuberculosis. M. R. Heynsius van den Berg.—p. 4793.
Comparative Tests of Sedimentation Speed of Erythrocytes by Langer's Micromethod and by Linzenmeier's Method. G. J. Huët.—p. 4799.
Peculiar, Probably Traumatic Spinal Lesion in Child. H. J. J. Blauwkuip.—p. 4806.
*Relative Importance of Sedimentation Speed and Viscosity of Blood in Tuberculosis. F. L. Oudendal.—p. 4813.
Traumatic Abscess of Spleen. W. Kouwenaar and A. W. Verhoef.—p. 4826.

Syphilis of the Lungs.—Hekman discusses two cases of pulmonary syphilis which would have been diagnosed as tuberculosis except for the continued absence of bacilli in the sputum. In each of these cases the Wassermann test was made as a final diagnostic resort and proved strongly positive. One of the patients was a woman, aged 52. She had had morning cough for twelve years. A feature of the history suggestive of syphilis was that eleven years before Hekman's examination she had been operated on for a small swelling in the left breast. The axilla was not touched. The swelling never recurred. There was, furthermore, a macula on the left cornea. The patient's general condition was fairly good, but recently she had had a considerably increased temperature. She reacted well to antisyphilitic treatment. The second patient was a girl, aged 8, who was sent to the surgical clinic on account of a fluctuating swelling, which appeared to be a cold abscess, at the level of the sixth rib. Rapid improvement followed antisyphilitic treatment. Roentgenograms of the lungs in the two cases are reproduced.

Blood Groups and Tuberculosis.—In forty children with surgical tuberculosis, de Bloeme failed to find any connection between the blood group or the blood group relationship of mother and child and a constitutional predisposition to tuberculosis.

Prognosis of Pulmonary Tuberculosis in Adults.—The presence of caverns Vos regards as of less prognostic importance than the form of tuberculosis with which they are associated in the individual case. They may be found in all forms. The extent of the process, also, is of much less importance than is the form of the disease. Extent has most influence on the prognosis when it results in shortness of breath. Hemorrhages from vessels that traverse the caverns are the most dangerous; hemorrhages from small telangiectatic vessels in cirrhotic forms of pulmonary tuberculosis do not have a great influence on the prognosis, even though they may be stubborn and of considerable amount. Hemorrhage may appear as the initial symptom in all forms of the disease; hence as such it has no prognostic significance. Both the sedimentation speed of erythrocytes and the shifting to the left in Arneth's formula should be tested repeatedly if one is to expect reliable prognostic indications from them. Sharp daily variations in temperature are a more unfavorable sign than a continued high temperature. Increase in weight he has found of slight prognostic importance. A sudden increase in the basal metabolism signifies a fresh extension of the pulmonary process.

Relative Importance of Sedimentation Speed and Viscosity of Blood in Tuberculosis.—In comparative examinations in a series of patients, Oudendal found that the specific viscosity of the blood serum was of more prognostic importance than the sedimentation speed of erythrocytes.

Acta Chirurgica Scandinavica, Stockholm

64: 1-186 (Oct. 19) 1928

Surgery of Sympathetic Nervous System. R. Leriche.—p. 1.
Combined Bed Remaking and Transport Stretcher, Intended for Use in Hospitals. S. Orell.—p. 24. In English.
Sick-Bed and Its Accessory Arrangements in Service of Surgical Therapy. S. Orell.—p. 31. In English.
Is Immediate Surgical Intervention in Perforated Gastric Ulcer Always Indicated? H. Wickbom.—p. 43.
*Treatment of Prolapsus Recti. G. Lundh.—p. 58. In English.
*Choleic Acid Enteroliths. J. Hellström.—p. 79.
*Experiences in Three Cases of Pulmonary Embolism with Operation by Trendelenburg's Technic. G. Nyström.—p. 110.
*Thrombo-Embolism: Its Surgical Treatment. K. H. Giertz and C. Crafoord.—p. 121. In English.
Two Cases of Obstructive Pulmonary Embolism with Successful Operation. C. Crafoord.—p. 172. In English.

Treatment of Prolapsus Recti.—Lundh analyzes eighty-four cases. In fourteen cases an entirely conservative method of treatment was adopted, consisting of dieting, rest in bed and rectal lavage; in sixty-nine cases simple thermocauterization was done but only after conservative methods had proved useless, and in one case only, in connection with an operation for prolapse of the uterus, was the rectum fixed to the uterus. Reexamination of the fourteen patients treated conservatively showed that two of them had had recurrences; one of these was subsequently treated by thermocauterization and got well, the other refused further treatment. Of the sixty-nine patients treated by thermocauterization all those of whom information could be obtained, or sixty-one, proved on reexamination to have no trouble whatsoever from their old disorder and in two cases only did the prolapse remain in a very slight degree.

Choleic Acid Enteroliths.—To the five cases of choleic acid enteroliths previously known, the author is adding two cases of his own, submitting the clinical histories and the result of chemical analysis of the stones. These are mainly made up of a free biliary acid, choleic acid; they are not, however, formed in the gallbladder but in the intestine. This is supported by the facts that the gallbladder was found to be normal

in the two cases in which it was possible to examine it, further, that in two cases the stones contained rests of vegetable food and lastly that in five cases the concretions contained enormous quantities of various bacteria. Choleic acid enteroliths would seem to arise as a result of marked increase of choleic acid in the intestine, conceivably originating from an abnormally rich excretion of sodium glycocholate with the bile or formed in the intestine itself through union of desoxycholic acid and higher free fatty acids. The production and growth of choleic acid enteroliths would also seem to be favored by abnormal bacterial disintegrating processes in the small intestine as well as by mechanical factors, such as strictures hampering the free passage through the intestine. All the patients have been women, the youngest 31, the oldest 75 years of age. At the operations the stones were found in different parts of the small intestine, from the neighborhood of the duodenojejunal flexure to the locality of the ileocecal valve. In three cases they were found in connection with tuberculous strictures. The weight of the stones has varied from 2 Gm. to 45 Gm.; the percentage of choleic acid has generally been 75. In one case multiple concretions were found; in the others, only one. In one case there was a recurrence six years after the first operation. Regarding the symptomatology, which in three cases was complicated by the presence of tuberculous strictures, there is no characteristic feature by which differential diagnosis can be definitely made from gallstones escaped into the intestine (gallstone ileus) or ordinary intestinal concretions. Nor is it likely that examination of the patient—including roentgen examination, which plays a great part—will reveal more than a concretion in the intestine; that this is in the nature of some choleic acid rest will only be determined by direct inspection and ultimately by chemical analysis. Choleic acid enteroliths are a great danger to the patient and should therefore be removed by operation, as no spontaneous discharge—except partially through vomiting—has ever been recorded. In the three cases with stones and tuberculous stricture intestinal resection was carried out with good results. In the five other cases the stones were removed by enterolithotomy, the result, however, being fatal in two.

Experiences in Three Cases of Pulmonary Embolism with Operation by Trendelenburg's Technic.—All of Nyström's patients left the operating table alive. A woman, aged 48 (pulmonary embolism after operation for hemorrhoids), lived for thirty hours; a woman, aged 45 (after cholecystectomy), lived for five hours; a man, aged 35 (after appendectomy), was discharged well and has resumed his work. All the patients were first operated on while in the agonal state. In the first case Nyström did a typical Trendelenburg operation; in the others he explored extrapleurally either after nipping off the sternal border in one case (unsatisfactory) or after additional resection of the third costal cartilage in the other case (good access). In one case there were small ruptures in the intima of the pulmonary artery on account of the tourniquet being pulled too tight. The blood stream was cut off in the three cases for sixty, sixty-five and (in the case in which the patient was saved) 104 seconds, respectively. In the last case the embolus was mostly removed by the aid of a suction tube especially constructed for the purpose. For reviving the heart epinephrine was injected into the aorta in the two last cases, with the best result.

Thrombo-Embolism: Its Surgical Treatment.—According to Giertz and Crafoord, thrombo-embolic disease is not on the increase. The increased frequency is only apparent and can be explained by a better appreciation of the symptoms, causing the condition to be diagnosed more often. Thrombo-embolic disease is not only directly dangerous to the patient because of pulmonary embolism but very considerably prolongs his stay in bed and delays his recovery. Genuine thrombo-embolic disease has a definite connection with surgical activities. It occurs more often and in more malignant forms in surgical than medical wards. Among surgical patients the disease occurs exceptionally in those in whom the operation has been performed on the head or the trunk and rarely in patients operated on on the upper extremities or the chest. Patients with varices—thrombophlebitis in particular—are very prone to thrombo-embolism. Otherwise, it affects the clinically healthy and the impaired, stout and thin persons, without discrimination. As a rule, neither the thrombus nor the embolus undergoes liquefaction. Raising the foot of the bed, as well as all other measures adopted with a view to establishing a better circulation in the veins of the lower extremities and pelvis, seems to be without importance. Thrombo-embolic disease can be present without any direct clinical signs of either thrombosis or embolism. The tendency of the manifest thrombosis to be localized to the left common iliac vein and its root area is not clearly borne out by the authors' material. A typical feature of the disease is the subfebrile and febrile arched curve with or without Mahler's sign; but a more or less regular subfebrile temperature without or with a slight postoperative effect on the pulse in cases which normally ought to be without such changes is also exceedingly suggestive of thrombotic disease and occurs almost regularly as a precursor of venous thrombosis as well as of pulmonary embolism. Combined with the typical changes in temperature and pulse, the attack of stitchlike pains or hemoptysis confirms the diagnosis of lung embolism even without manifest thrombosis. The obstructive pulmonary embolus presents almost without exception such a typical clinical picture that for all intents and purposes no doubt need be entertained as to the diagnosis. If a patient who without demonstrable pathologic changes in lungs, heart or kidneys, either in the past or during his or her present disorder, has undergone any operation which, according to experience, may be followed by pulmonary emboli, and if suspicious symptoms occur at a time when such emboli are generally found to occur, i. e., at the earliest on the fourth day, most often in the second week after the operation, then one is justified, on the appearance of dangerous symptoms, in suspecting obstructive pulmonary embolism. This is usually anticipated by a subfebrile temperature otherwise unexplainable, very rarely by slight attacks of lung embolism, exceptionally by venous thrombosis. In most cases the onset is sudden with typical symptoms, of which the most usual are intense pallor, loss of pulse and consciousness; common symptoms are also oppression, craving for air and a mild cyanosis with a typical venous pulsation above the clavicles, an expression of the spasmodic attempts at contraction on the part of the right ventricle. Only a few patients with obstructive lung emboli die instantaneously. For most some time elapses between the onset of the first attack and death, sufficiently long to allow a Trendelenburg operation to be performed.

Finska Läkaresällskapets Handlingar, Helsingfors

70: 669-777 (Sept.) 1928

*Incidence of Goiter in Finland and Relation to Iodine Content of Water. E. Adlercreutz.—p. 669.
Reexamination of Patients Treated with Insulin. G. Nylander.—p. 728.
*Significance of Mechanical Irritation as Etiologic Factor in Pathogenesis of Otosclerosis. F. Leiri.—p. 738.

Incidence of Goiter in Finland and Relation to Iodine Content of Water.—Adlercreutz explains the inverse relation found in the main between the iodine content of the water and the prevalence of goiter in Finland and the exceptions to the rule by the assumption that iodine deficiency is important only as an indirect causal factor. McCarrison's view of multiple causes in the etiology of endemic goiter seems to him most probable. These causes, he says, are presumably of different kinds in different localities, perhaps even of different intensity, a circumstance which may in turn bear a relation to the absence of uniformity of type in endemic goiter.

Importance of Mechanical Irritation as Etiologic Factor in Pathogenesis of Otosclerosis.—Leiri asserts that, since the otosclerotic foci are generally located in the wall or immediate vicinity of the posterior semicircular canal, which seems to be in a high degree liable to mechanical disturbances, mechanical factors, while not a fundamental cause of otosclerosis, may be considered as playing an important part in the development and especially the localization of the foci, in the same manner as in the various forms of metaplastic osteomalacia (Recklinghausen) and in juvenile diseases of the epiphysis.

CORRECTION

In the list of articles in *Klinische Wochenschrift*, Sept. 23, 1928, which appeared in THE JOURNAL, November 24, p. 1671, the title of Fahlbusch's article (p. 1864) should read "Increase of Infant Deaths During and After Delivery."